

TA-F333ESL/F770ES/F870ES

SERVICE MANUAL



Photo: TA-F333ESL

AEP Model
UK Model
TA-F770ES

E Model
TA-F333ESL

Germany Model
TA-F770ES/F870ES

SPECIFICATIONS

Amplifier Section

Items	Condition		Data	
			TA-F870ES	TA-F333ESL/TA-F770ES
Continuous RMS power output (both channels driven simultaneously)	4 ohms, 20 Hz – 20 kHz	Countries other than North European Countries	170 W + 170 W (THD 0.02%) (DIN: 200 W + 200 W)	140 W + 140 W (THD 0.02%) (DIN: 180 W + 180 W)
	6 ohms, 20 Hz – 20 kHz	North European countries	—	110 W + 110 W (THD 0.018%) (DIN: 130 W + 130 W)
	8 ohms, 20 Hz – 20 kHz	Countries other than North European countries	120 W + 120 W (THD 0.004%) (DIN: 135 W + 135 W)	100 W + 100 W (THD 0.015%) (DIN: 120 W + 120 W)
		North European countries	—	90 W + 90 W (THD 0.015%) (DIN: 105 W + 105 W)
Power band width (IHF)	8 ohms, THD 0.02%		10 Hz – 100 kHz at 45 W	10 Hz – 100 kHz at 45 W
Dynamic headroom ('78 IHF)	4 ohms		2 dB	2 dB
	8 ohms		1.2 dB	1.2 dB
Total harmonic distortion	8 ohms, at 10 watt output		0.003%	0.003%
Intermodulation (IM) distortion 60 Hz: 7 kHz = 4 : 1	4 ohms, at rated output		0.008%	0.008%
	6 ohms, at rated output		0.006%	0.006%
	8 ohms, at rated output		0.004%	0.004%
Damping factor	8 ohms, at 1 kHz		100	100
Residual noise	network A, 8 ohms		less than 110 μ V	less than 110 μ V

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INTEGRATED STEREO AMPLIFIER
SONY[®]

Items	Condition	Data	
		TA-F870ES	TA-F333ESL/TA-F770ES
Frequency response	PHONO MM	RIAA equalization curve ± 0.2 dB	RIAA equalization curve ± 0.2 dB
	TUNER, CD, TAPE 1, 2, 3, DIRECT IN	2 Hz – 200 kHz ± 3 dB	2 Hz – 200 kHz ± 3 dB
Input sensitivity	PHONO	MC 0.17 mV (1 kohm) 0.17 mV (100 ohms)	0.17 mV (1 kohm) 0.17 mV (100 ohms)
		MM 2.5 mV, 50 kohms	2.5 mV, 50 kohms
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3, ADAPTOR, AUX	150 mV, 20 kohms	150 mV, 20 kohms
S/N (network) ('78 IHF)	PHONO	MC 79 (0.5 mV)	77 (0.17 mV)
		MM 93 (5 mV)	93 (2.5 mV)
	TUNER, CD, DIRECT IN, TAPE 1, 2, 3, ADAPTOR, AUX	105 (150 mV)	105 (150 mV)
Output voltage impedance	REC OUT 1, 2, 3 ADAPTOR	150mV, 1kohm	150mV, 1kohm
	HEADPHONES	25 miliwatts (at 8 ohms) Accepts low and high impedance headphones.	25 miliwatts (at 8 ohms) Accepts low impedance headphones.
Tone controls	BASS, at 100 Hz	± 7 dB	± 7 dB
	TREBLE, at 10 kHz	± 6 dB	± 6 dB
Subsonic filter	—	6 dB/octave attenuation below 15 Hz	6 dB/octave attenuation below 15 Hz
Muting	—	– 20 dB	– 20 dB

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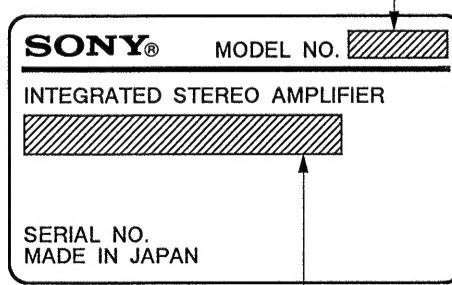
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MODEL IDENTIFICATION

— Specification Labels —

TA-F333ESL
TA-F770ES
TA-F870ES

AEP, Germany model: AC: 220 V ~50/60 Hz
 UK model: AC: 240 V ~50/60 Hz
 E model: AC: 120/220/240 V ~50/60 Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

General

System Preamplifier section: Low-noise high gain NFB type equalizer amplifier, passive type direct tone control
Power amplifier section: Pure-complementary SEPP power amplifier, MOS FET power transistor for final stage.

Power requirements
UK model: 240 v AC, 50 Hz
AEP, Germany model: 220 – 230 V AC, 50/60 Hz
E model: 120 V, 220 V, or 240 V AC, adjustable, 50/60 Hz

Power consumption

	TA-F870ES	TA-F333ESL TA-F770ES
UK model	–	760 W
Germany model	390 W	330W
North European model	–	260 W
European model	–	330 W
E model	–	330 W

AC outlet

	TA-F870ES	TA-F770ES
UK model	–	1 switched, 100 W max.
Germany model	1 switched 100 W max.	1 switched 100 W max.
AEP model	–	1 switched 100 W max.

Dimensions

TA-F333ESL/TA-F770ES (AEP, E, Germany model):

Approx. 470 × 165 × 435 mm (w/h/d)
(18½ × 6½ × 17⅛ inches)

TA-F770ES (UK model):

Approx. 430 × 165 × 435 mm (w/h/d)
(17 × 6½ × 17⅛ inches)

TA-F870ES (Germany model):

Approx. 470 × 165 × 435 mm (w/h/d)
(18½ × 6½ × 17⅛ inches)

Weight

TA-F333ESL/TA-F770ES (AEP, E, Germany model):

Approx. 21.3 kg (47 lbs) net

TA-F870ES (U. K. model):

Approx. 20 kg (44 lbs 2oz) net

TA-F870ES (Germany model)

Approx. 24 kg (53 lbs) net

Accessories supplied

Remote commander RM-S703 (1)

Sony batteries SUM-3 (NS)

Screws (8) (except for U. K. model)

Design and specifications subject to change without notice.

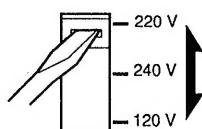
Note

This appliance conforms with EEC directive 87/308/EEC regarding interference suppression.

Operating Voltage

Before connecting the unit to an AC outlet, be sure that the operating voltage of your unit is identical with that of your local power supply.

UK model	Operates on 240 V AC, 50 Hz.
AEP, Germany model	Operates on 220 – 230 V AC, 50/60 Hz.
E model	Operates on either 120 V, 220 V, 240 V AC, adjustable, 50/60 Hz. The voltage selector is located on the rear panel. If you need to change the selector, disconnect the AC power cord and set the selector to the proper voltage of your local power supply.



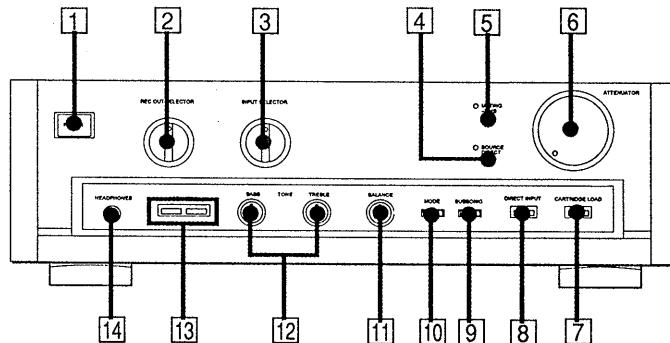
SECTION 1

GENERAL

This section is extracted from instruction manual.

Function of Controls

Front panel

**[1] POWER switch and indicator**

After the power is turned on, the standby indicator lights in red as the built-in muting circuit activates. When the amplifier stays in a stable operating condition, the indicator lights in green.

The indicator lights in red if the unit detects shorting of circuit of the speaker outputs or in case of short-circuit of the inputs of DC components. In such a case, disconnect the power source and check the connected components and speaker systems.

[2] REC OUT SELECTOR

Selects the program source sent to the REC OUT jacks for recording.

[3] INPUT SELECTOR

Selects the desired program source for listening.

[4] SOURCE DIRECT button and indicator

Depress the button. The red indicator lights and the circuits of the TONE control, SUBSONIC filter button, BALANCE control and MODE selector are disengaged without regard to the setting of the switches.

[5] MUTING button and indicator

Depress the button to reduce the sound level by 20 dB. (Output voltage becomes 1/10) Generally, keep the button released (OFF).

[6] ATTENUATOR

Adjusts the sound level. To increase the sound level, turn the control clockwise. To decrease the level, turn the control counterclockwise.

Note

Turn down the sound level before switching on the unit. This prevents damage to speakers.

[7] CARTRIDGE LOAD selector

Set the selector according to your cartridge.

MM: For moving-magnet type cartridge

MC: For moving-coil type cartridge

40 Ω: For a cartridge with an impedance of 40 ohms or more.

3 Ω: For a cartridge with an impedance of 3 ohms to 40 ohms.

[8] DIRECT INPUT selector

Set to SOURCE to select program source with the INPUT SELECTOR.

To listen to a program source processed through the equipment, such as graphic equalizer, connected to the ADAPTOR jacks, set it to ADAPTOR

To listen to a program source connected to DIRECT IN jacks, set it to DIRECT.

[9] SUBSONIC filter button

Depress the button to reduce noise components of less than 15 Hz, which cause modulation noise.

[10] MODE selector

STEREO: For listening to a stereo program.
MONO: For listening to a monaural program.

[11] BALANCE control

Adjusts the sound level of left and right speakers.

[12] BASS and TREBLE TONE controls

Adjust the tone quality.
To increase bass or treble sound, turn the control clockwise. To decrease them, turn the control counterclockwise.

[13] SPEAKERS buttons (TA-F222ESA/TA-F570ES/TA-F670ES)

Select speaker system A or B, or both.

To drive speaker system A: Depress A button.

To drive speaker system B: Depress B button.

To drive speaker system A and B: Depress A and B.

For headphones listening only: Set both to OFF (□).

TA-F670ES only

To use power amplifier or active speaker system connected to the PRE OUT jacks, depress B/PRE OUT.

SPEAKERS selector

Select speaker system A or B, or both.

To drive speaker system A: Set the selector to A.

To drive speaker system B: Set the selector to B.

To drive speaker system A and B: Set the selector A+B.

For headphones listening only: Set the selector to OFF.

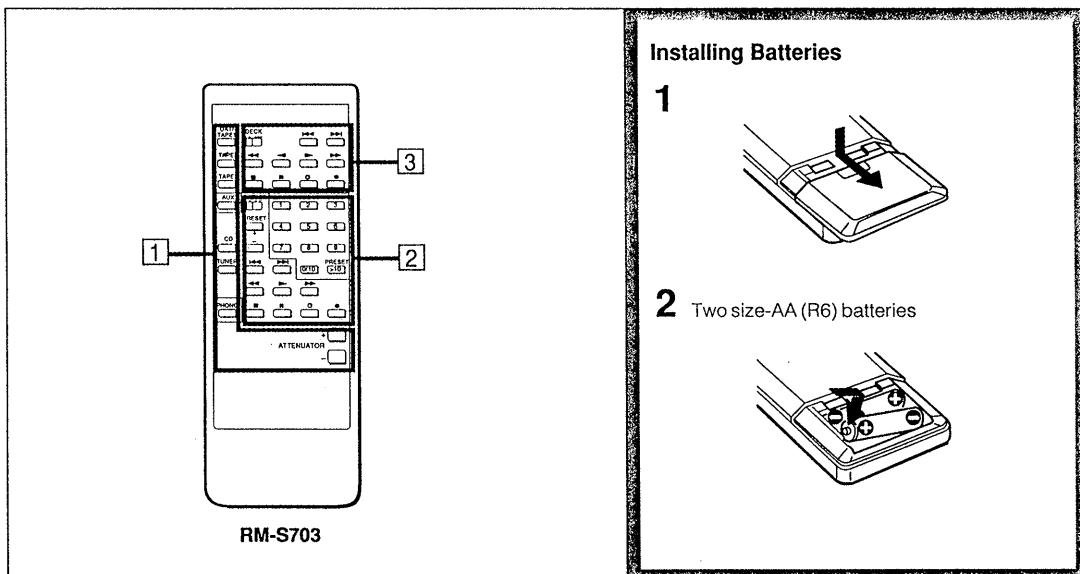
To use power amplifier or active speaker system connected to the PRE OUT jacks, set the selector to B/PRE OUT.

[14] HEADPHONES jack

Accepts the stereo phone plug of headphones.

[15] Remote control sensor

Remote Commander RM-S703



Function of Controls

1 Amplifier control section

Input selectors: Select an input source of the amplifier.
ATTENUATOR +/- buttons: Control the volume of
amplifier.

2 Tuner/DAT deck/CD player control section

DAT/CD selector: Selects DAT deck or CD player.
 ▲◀▶◀▶: Locates a desired selection.
 ▲◀▶◀▶: Manual search
 ▶: Play
 ■: Stop
 □: Pause
 .: Record muting
 ●: Recording
 PRESET +/- buttons: Selects a preset channel of tuner. (only for the tuner)
 Program number (1 to 0/10, and >10) and ENTER buttons: Select a preset station or track.

3 Tape deck control section

- DECK A/B selector: Selects deck A or B.
- ◀▶▶▶: Locates a desired selection.
- ◀▶: Play
- ◀▶▶▶: Fast winding
- : Stop
- : Pause
- : Record muting
- : Recording

Notes on Batteries

Battery life

About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries. When the batteries are exhausted, the remote commander can no longer operate the unit. If this happens, replace both batteries with new ones.

To avoid battery leakage

When the commander is not used for a long time, remove the batteries to avoid damage caused by battery leakage and corrosion.

To avoid malfunction of the remote commander

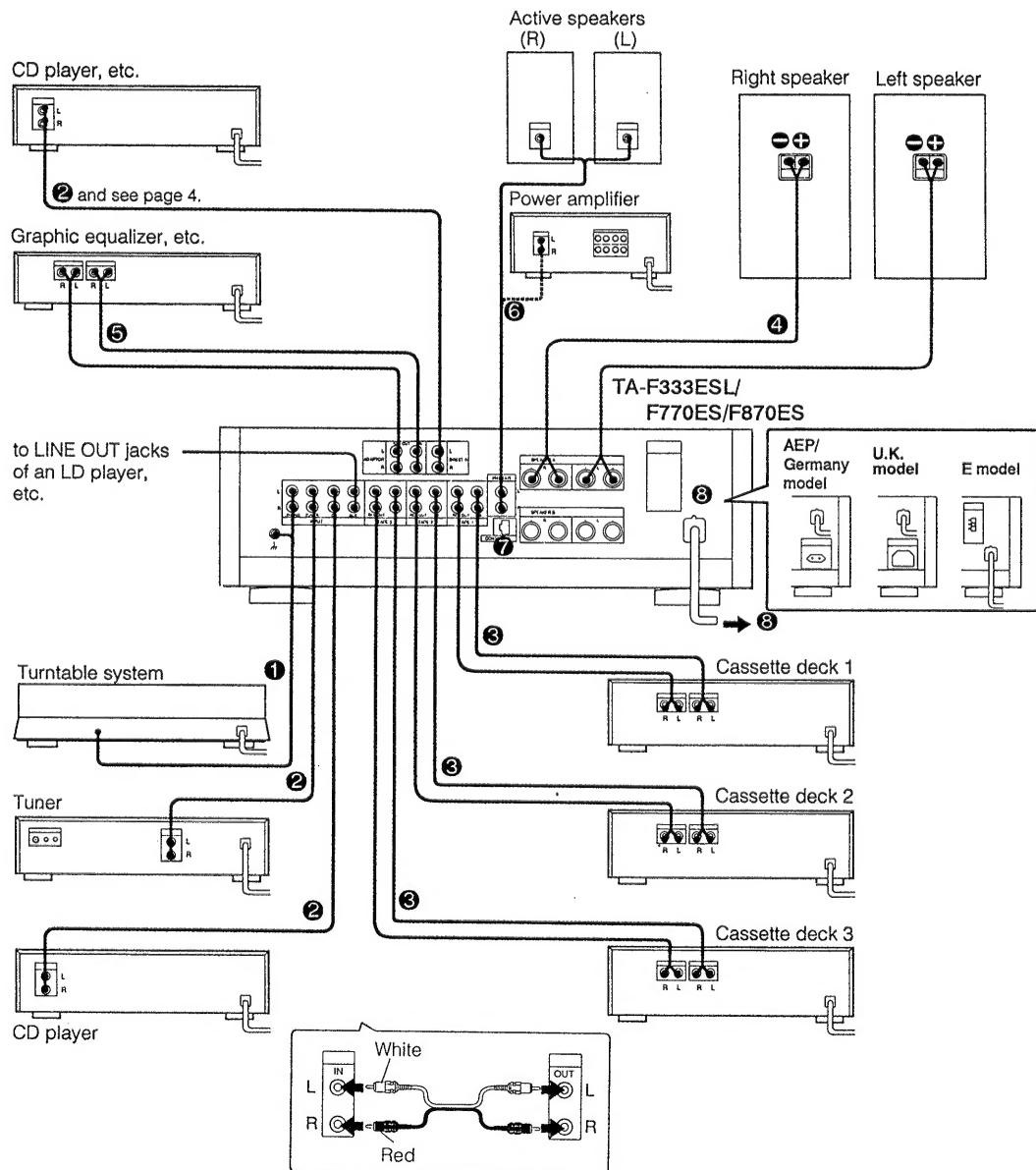
To avoid malfunction of the remote commander
Avoid keeping the commander under extremely hot or humid locations.

System Connections

Connection Notes

- Connect the AC power cord last of all. Make sure that the power is off when making connections.
- Cord plugs and jacks are color coded. Red plugs and jacks are for right channel (R) and white ones for the left channel (L).
- Insert the cable connectors fully into the jacks. A loose connection may cause hum and noise.
- Connect the + and – cords of the speaker systems correctly to the + and – terminals of the amplifier respectively.

The numbers described ● correspond to the individual connecting diagram.



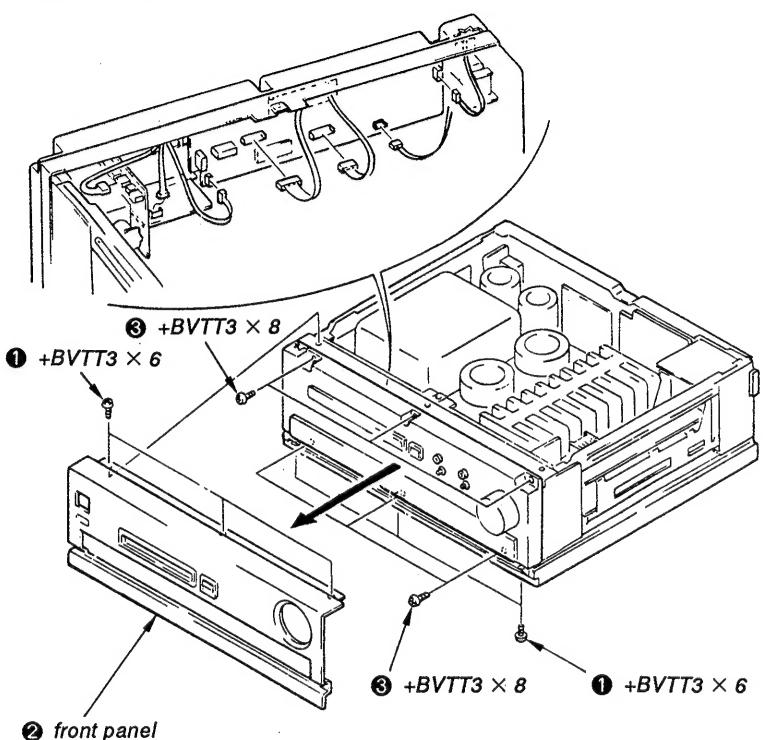
To enjoy pure sound

Connect a CD player or a tuner to the DIRECT IN jacks. DIRECT IN circuitry bypasses the INPUT SELECTOR and REC OUT SELECTOR so the signal is sent directly to the amplifier. Note that the program source input through DIRECT IN jacks cannot be processed through an adaptor nor be output through REC OUT jacks.

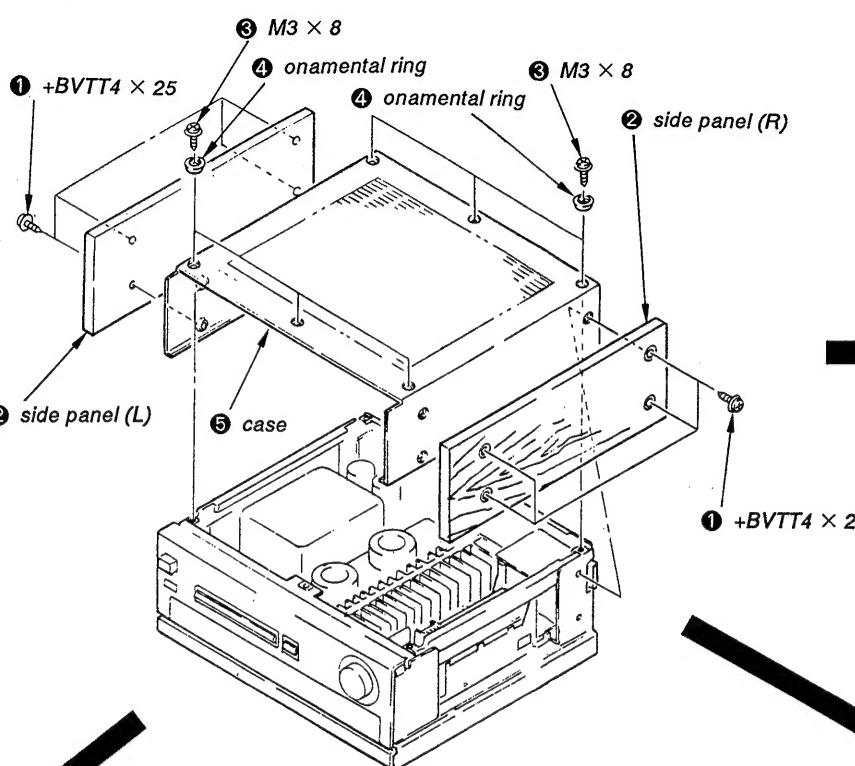
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

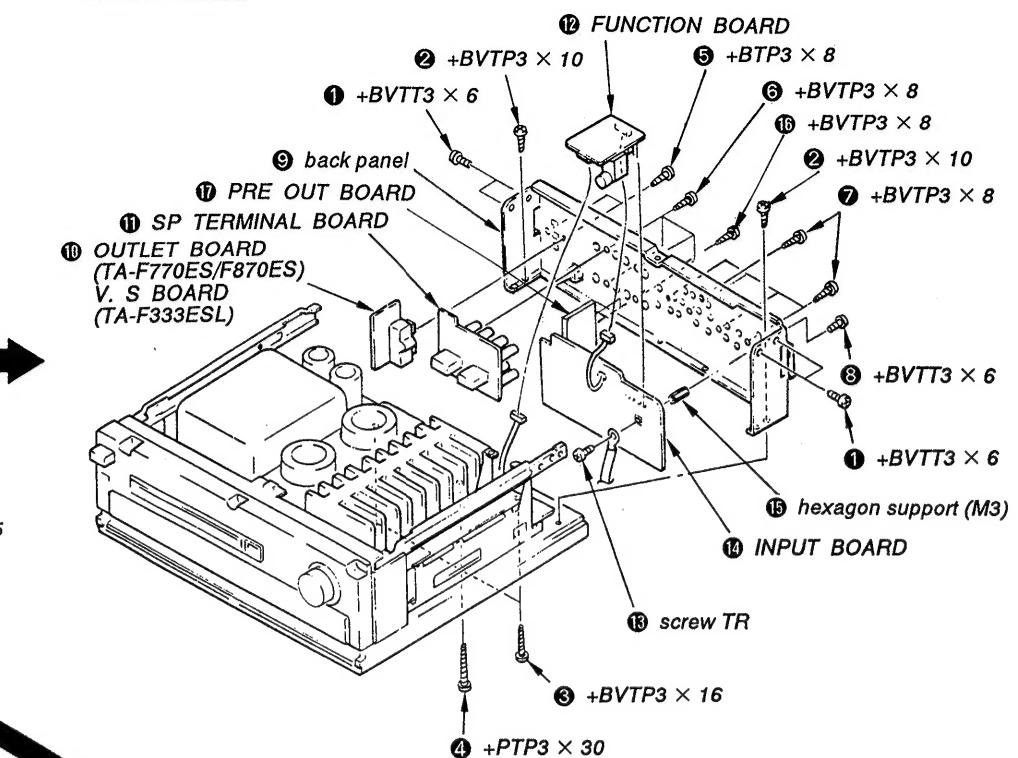
FRONT PANEL



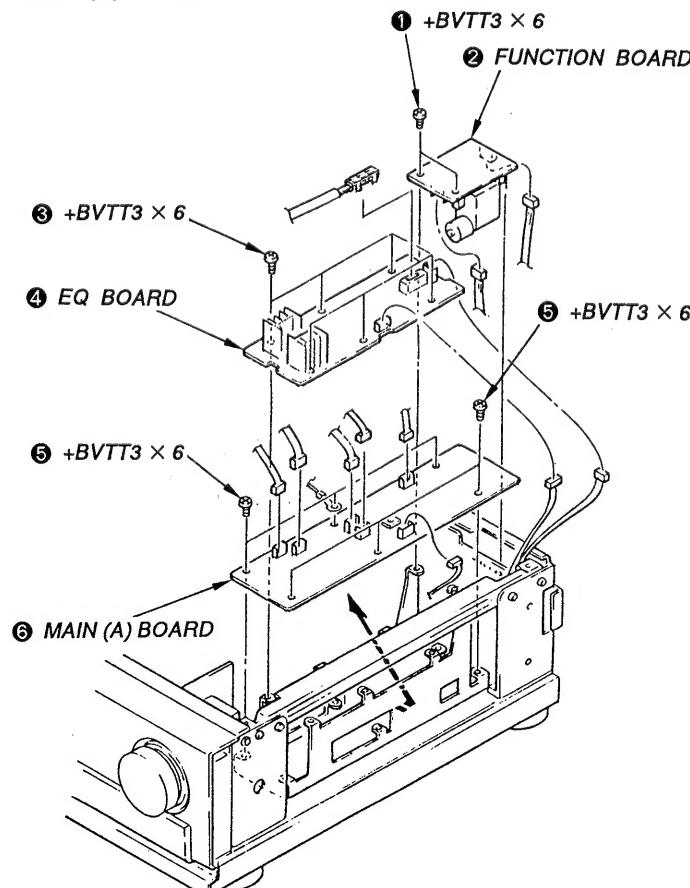
CASE



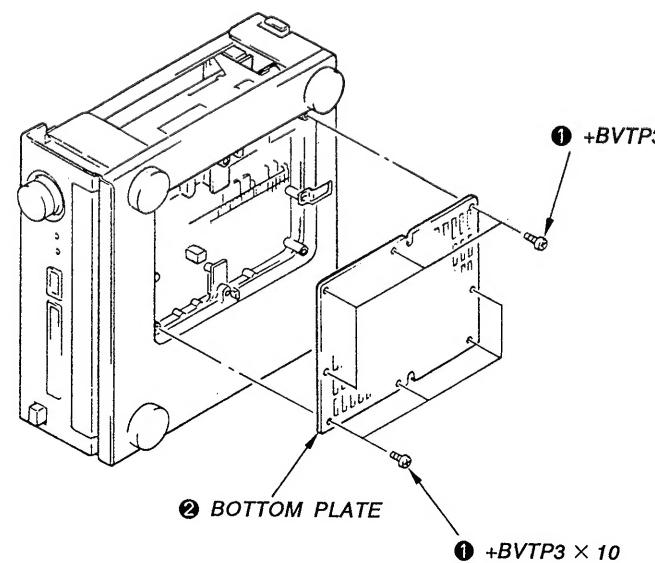
BACK PANEL



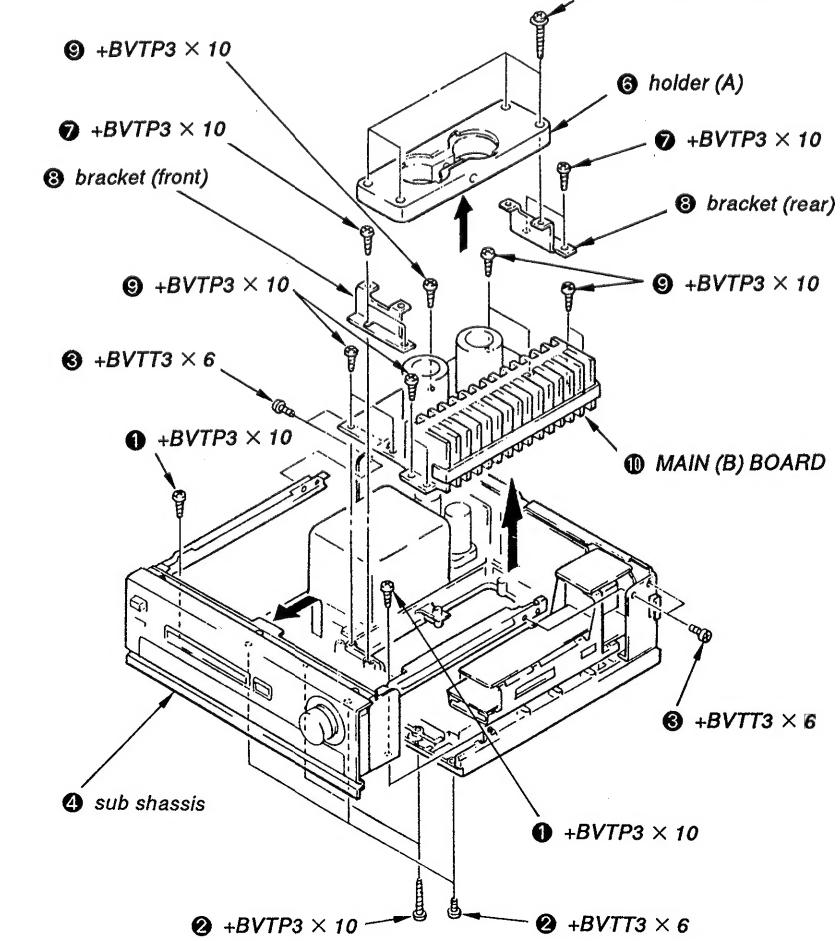
MAIN (A) BOARD



MAIN (B) BOARD CHECKING METHOD

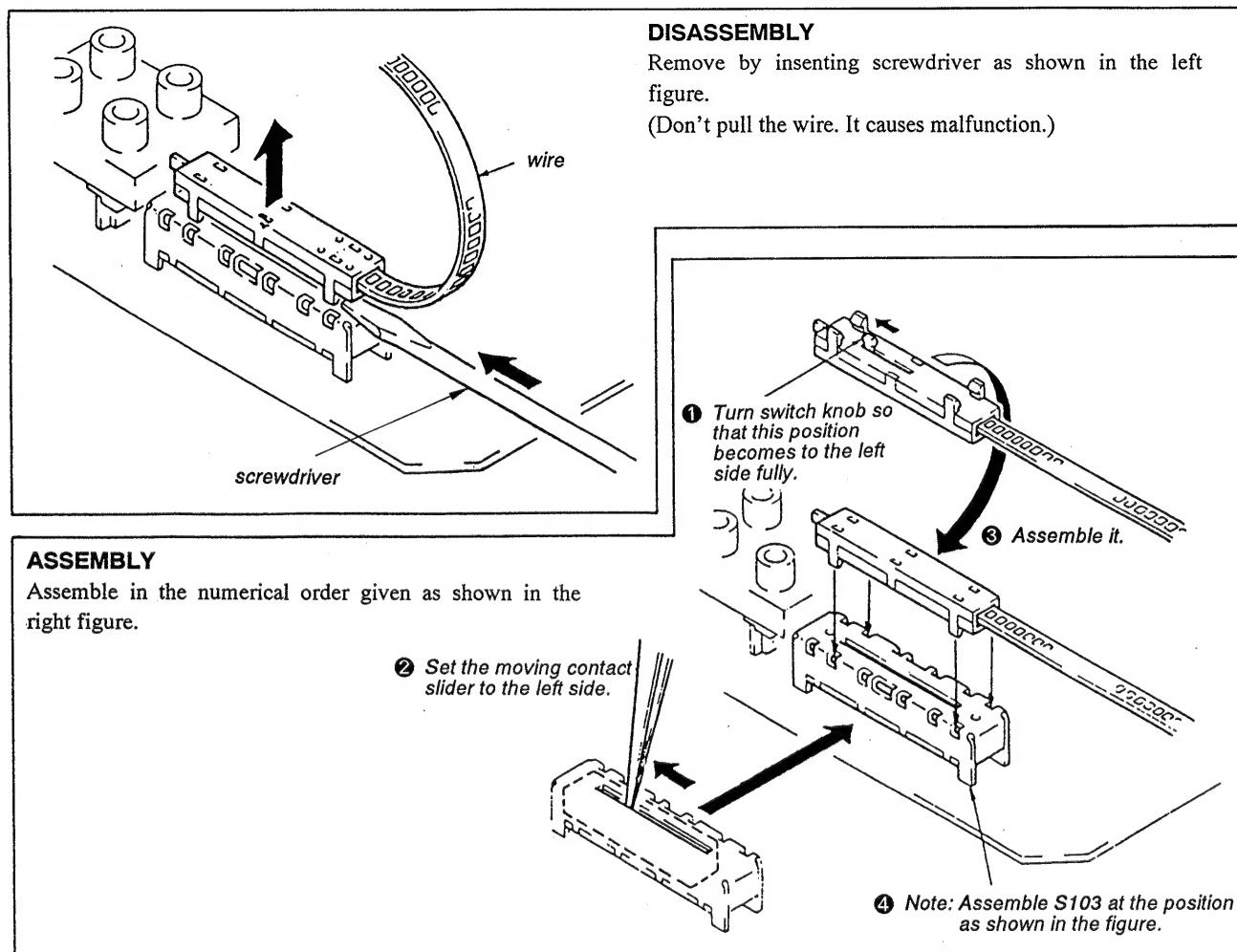


MAIN (B) BOARD



SECTION 3

SWITCH DISASSEMBLY AND ASSEMBLY



SECTION 4

ELECTRICAL ADJUSTMENTS

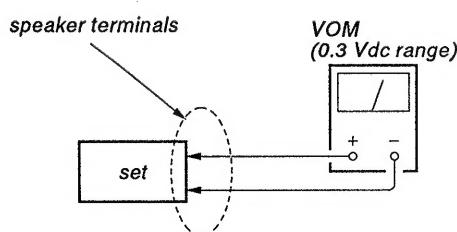
Note: adjustment should be performed 5 minutes later, after the power switch is on.

Offset Adjustment

Setting:

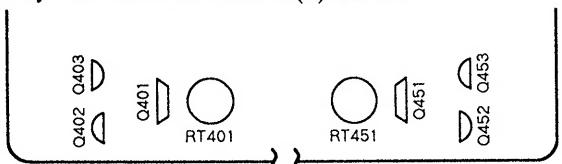
OPERATION switch: STEREO
Input signal: No signal input

Procedure:



Adjust RT401 (L-CH) and RT-451 (R-CH) for 0 V reading on the VOM.

Adjustment Location: MAIN (A) BOARD



Bias Current Adjustment

Setting:

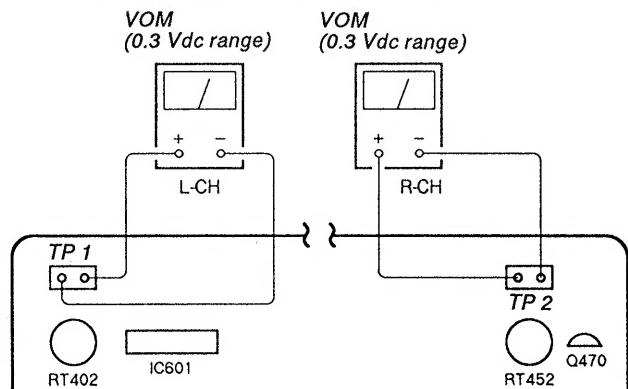
OPERATION switch: STEREO
Input signal: No signal input

Procedure:

Adjust RT402 (L-CH) and RT-452 (R-CH) so that VOM reading of TP-1 (L-CH), TP-2 (R-CH) become 35 mv.

Adjustment Location: MAIN (B) BOARD

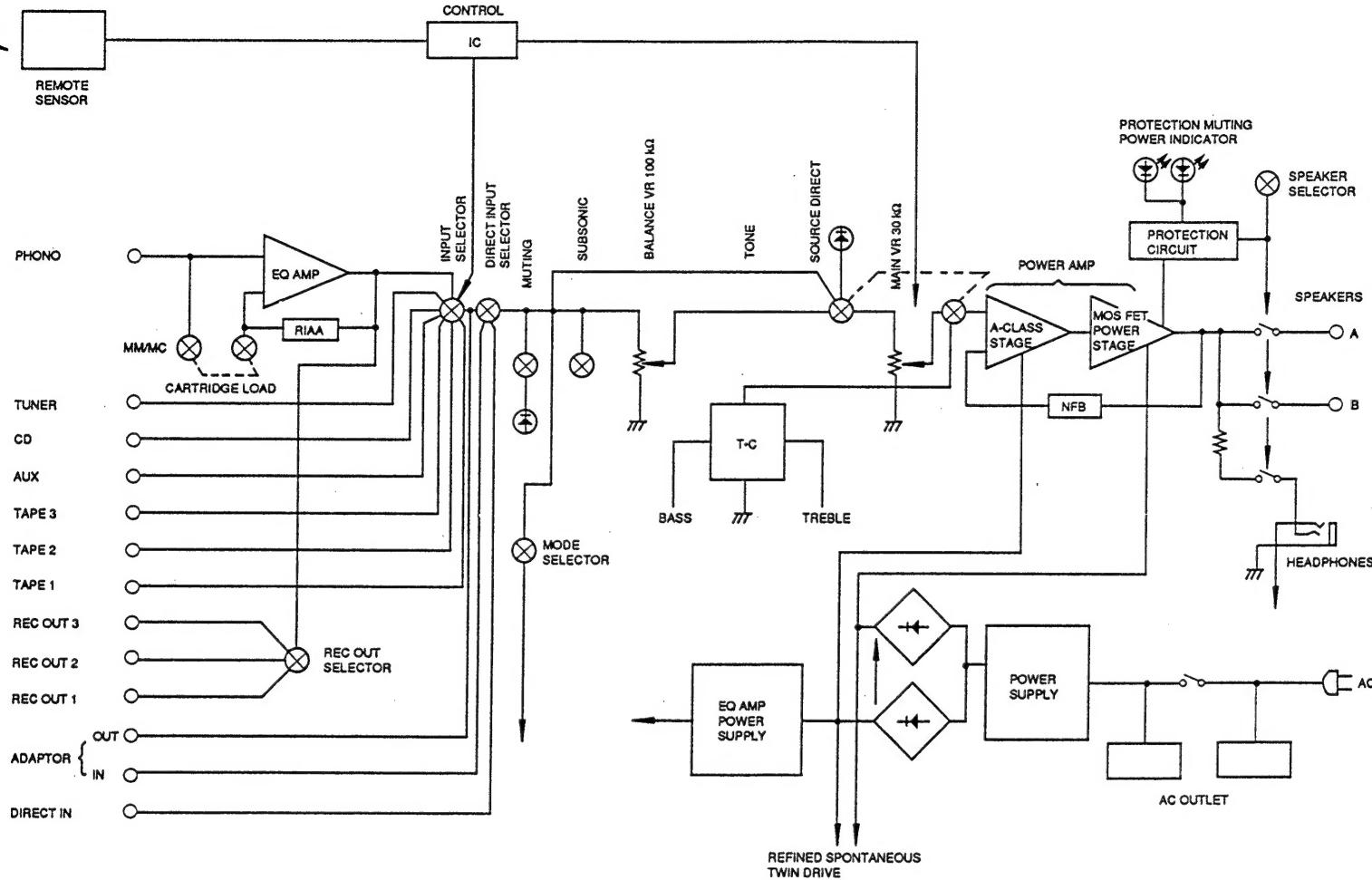
VOM (0.3 Vdc range) VOM (0.3 Vdc range)



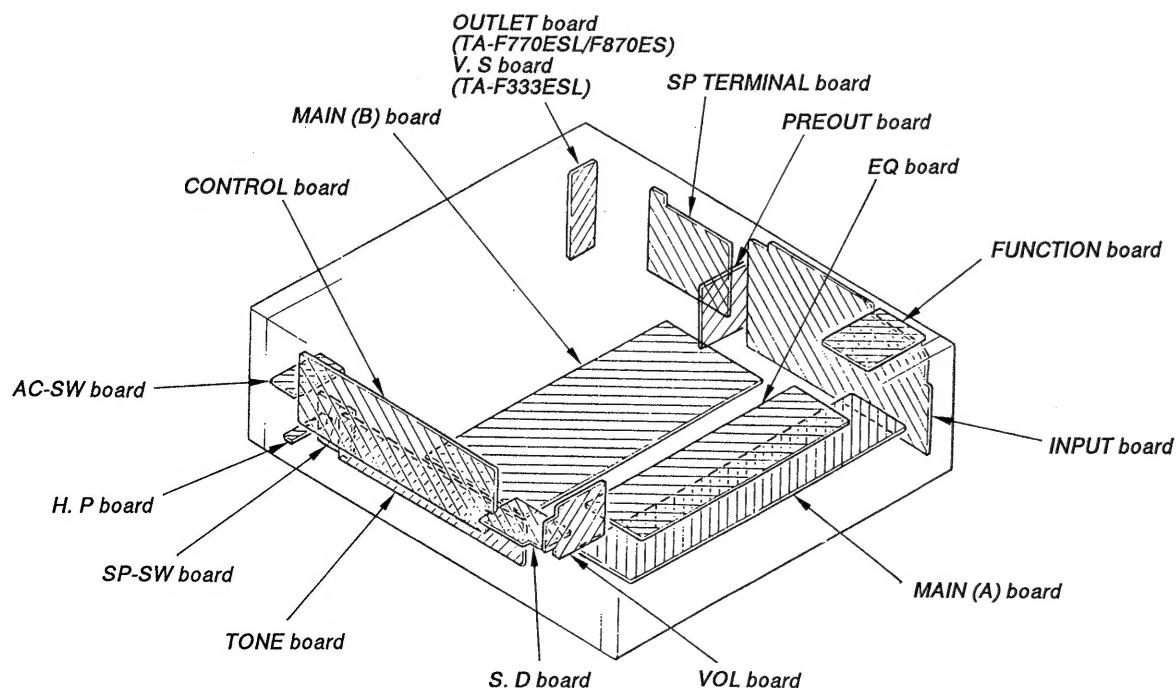
SECTION 5

DIAGRAMS

5-1. BLOCK DIAGRAM



5-2. CIRCUIT BOARDS LOCATION



Note on Printed Wiring Board:

Note:

- : parts extracted from the component side.

Note on Schematic Diagram:

Note:

- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$ 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4} \text{W}$ or less unless otherwise specified.
- % : indicates tolerance.
- Components for right channel have same values as for left channel.
- : nonflammable resistor.
- : fusible resistor.

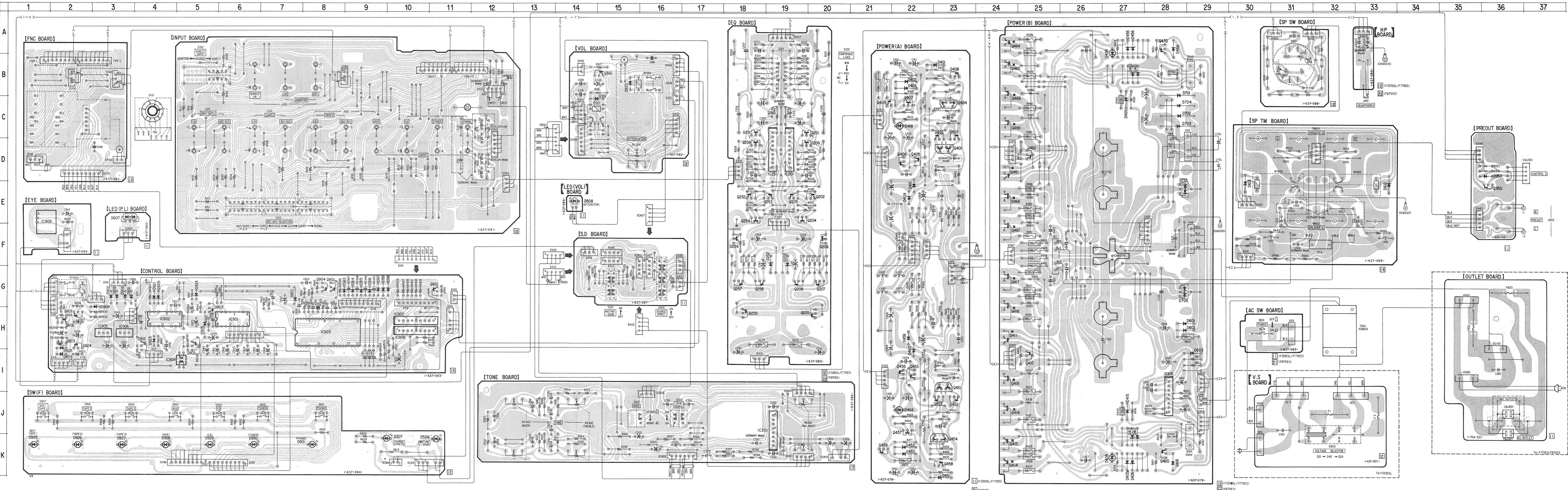
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

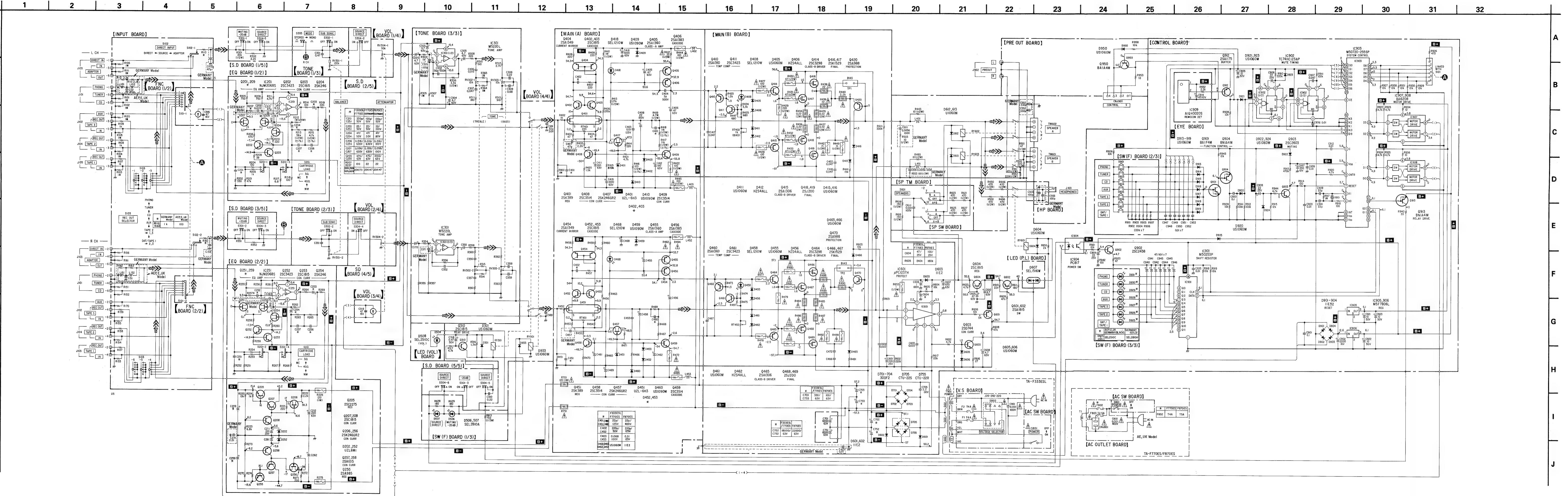
- $\text{B}+$: $\text{B}+$ Line.
- $\text{B}-$: $\text{B}-$ Line.
- : adjustment for repair.
- Voltages are taken with a VOM (10 $\text{M}\Omega/\text{V}$). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- : PHONO

5-3. PRINTED WIRING BOARDS

• See page 22, 23 for Semiconductor Lead Layouts and Semiconductor Location.

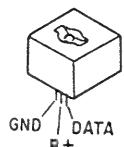
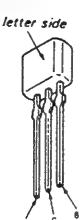
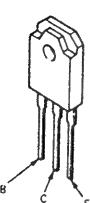
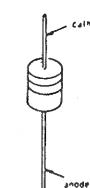
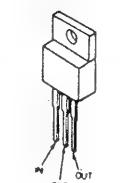
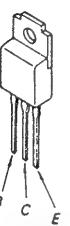
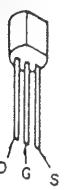
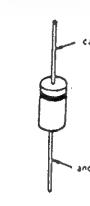
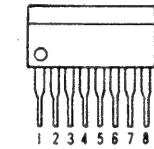
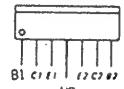
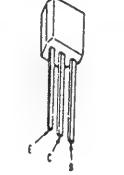
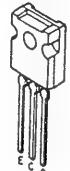
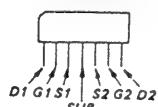
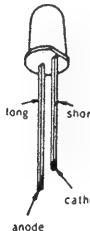
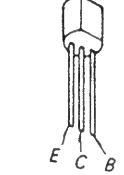
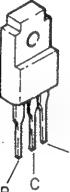
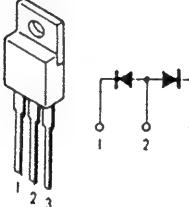
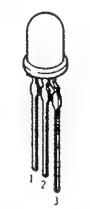
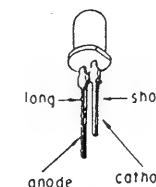
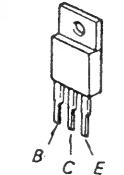
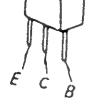
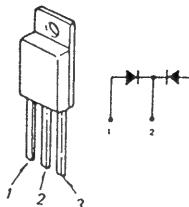
• See page 11 for Notes.





• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D202	F-19	IC601	I-28
D252	F-19	IC901	H-6
D301	C-14	IC902	H-4
D401	B-23	IC903	H-8
D402	B-22	IC904	I-5
D403	B-22	IC905	H-3
D405	K-27	IC906	H-3
D406	K-27	IC907	H-10
D408	K-27	IC908	H-10
D409	E-22	IC909	E-1
D410	E-22		
D411	K-27	Q201	C-19
D412	K-27	Q202	E-20
D415	J-27	Q203	E-19
D416	K-28	Q204	E-19
D418	C-22	Q205	H-20
D451	K-23	Q206	F-20
D452	K-22	Q207	G-20
D453	K-22	Q208	G-19
D455	A-27	Q209	D-19
D456	A-27	Q251	C-18
D458	A-27	Q252	E-18
D459	H-22	Q253	E-19
D460	H-22	Q254	E-18
D461	B-27	Q255	H-18
D462	B-27	Q256	F-18
D465	C-27	Q257	G-18
D466	A-28	Q258	G-18
D468	J-22	Q259	D-18
D506	K-11	Q310	B-15
D507	K-10	Q401	D-23
D508	E-14	Q402	C-23
D601	H-28	Q403	C-23
D602	H-28	Q404	C-23
D603	I-29	Q405	D-22
D604	G-3	Q406	D-22
D605	H-2	Q407	C-22
D606	I-2	Q408	B-23
D607	E-3	Q409	C-21
D612	E-33	Q410	I-25
D613	E-30	Q411	H-24
D701	C-28	Q414	K-24
D702	C-28	Q415	K-24
D703	C-28	Q416	H-24
D704	C-28	Q417	G-24
D705	G-28	Q418	J-24
D755	E-28	Q419	I-24
D901	G-3	Q420	K-28
D902	G-3	Q451	I-23
D903	G-3	Q452	J-23
D904	G-3	Q453	J-23
D905	H-5	Q454	K-23
D913	G-8	Q455	I-22
D914	G-9	Q456	I-22
D915	G-9	Q457	J-22
D916	G-9	Q458	K-23
D917	G-9	Q459	K-21
D918	G-10	Q460	D-25
D919	G-9	Q461	D-24
D920	G-4	Q464	A-24
D921	G-4	Q465	B-24
D922	G-7	Q466	E-24
D923	H-4	Q467	F-24
D924	G-5	Q468	C-24
D925	K-1	Q469	C-24
D926	K-2	Q470	A-28
D927	K-3	Q601	H-2
D928	K-4	Q602	H-2
D929	K-5	Q603	H-2
D930	K-6	Q604	H-2
D931	K-8	Q901	G-8
D933	B-15	Q902	H-5
D950	D-36	Q903	H-5
		Q904	G-8
IC201	D-19	Q912	H-4
IC251	D-19	Q913	G-11
IC301	J-19	Q950	E-36

• Semiconductor Lead Layouts
A1QH3020S

**2SA1175-FEK
2SC2785-HFE**

**2SJ200-Y
2SK1529-Y**

**HZS6B1L
HZS6C3L
1SS120
11ES2**

M5F7806L

2SA1306A-0

**2SK147-V
2SK170-V**

**HZS6B1L
HZS6C3L
1SS120
11ES2**

μ PC1237HA

2SA1349-GR. BL

**DTA114ES
DTC114ES
DTC124ES
2SC2603-EF**

**2SA1360-0
2SC3423-0**

2SK389-GR

SEL1210W

**2SA988-PAFAEA
2SA1015-GR
2SC1815-BL**

2SD1763A

CTU-22R

SEL1516W

**SEL2510C-D
SEL2810A**

**2SA985A-QP
2SA1383
2SC2275-P
2SC3514**

2SD774-34

CTU-22S


SECTION 6

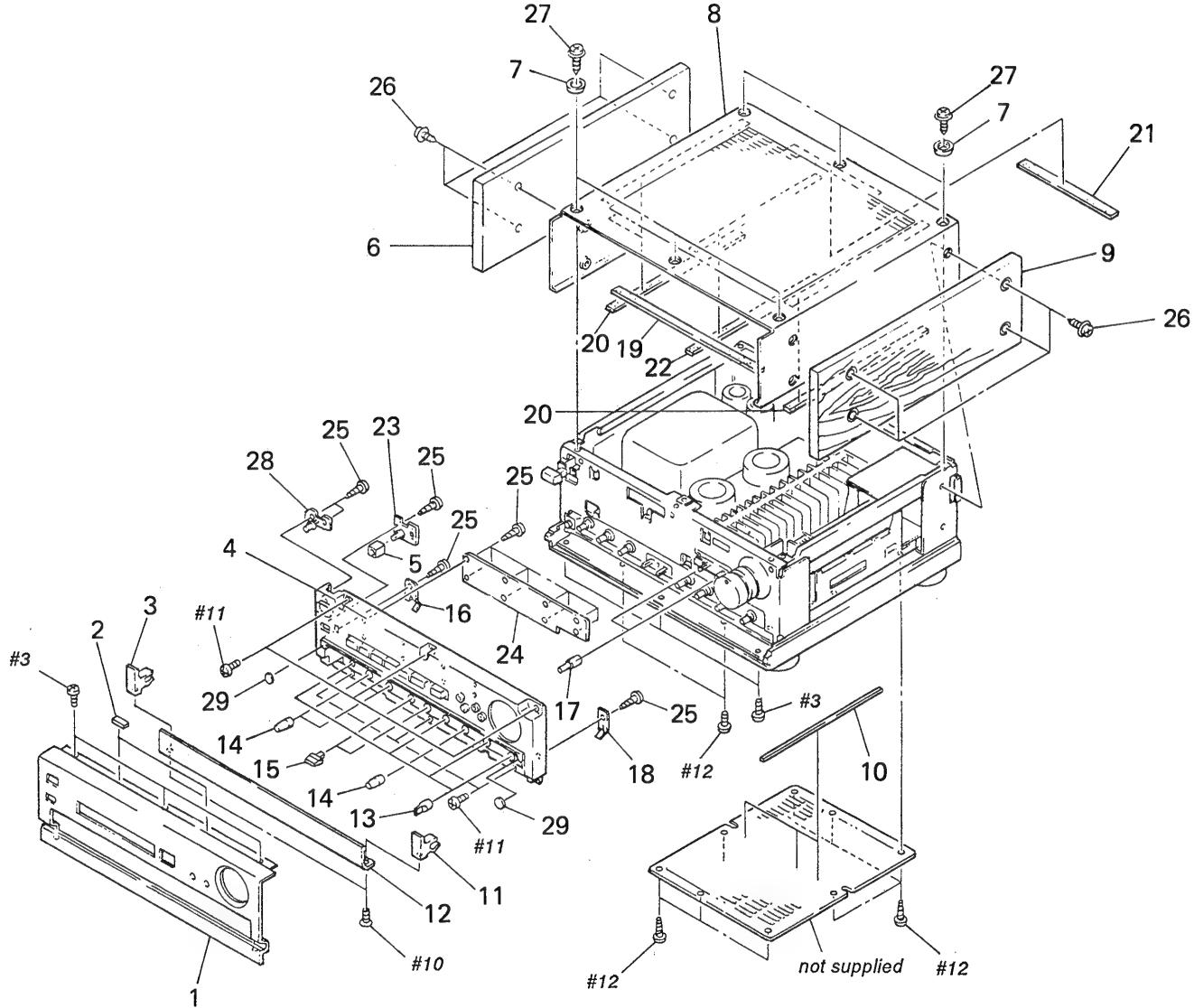
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE) . . . (RED)
 ↑ ↑
 Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

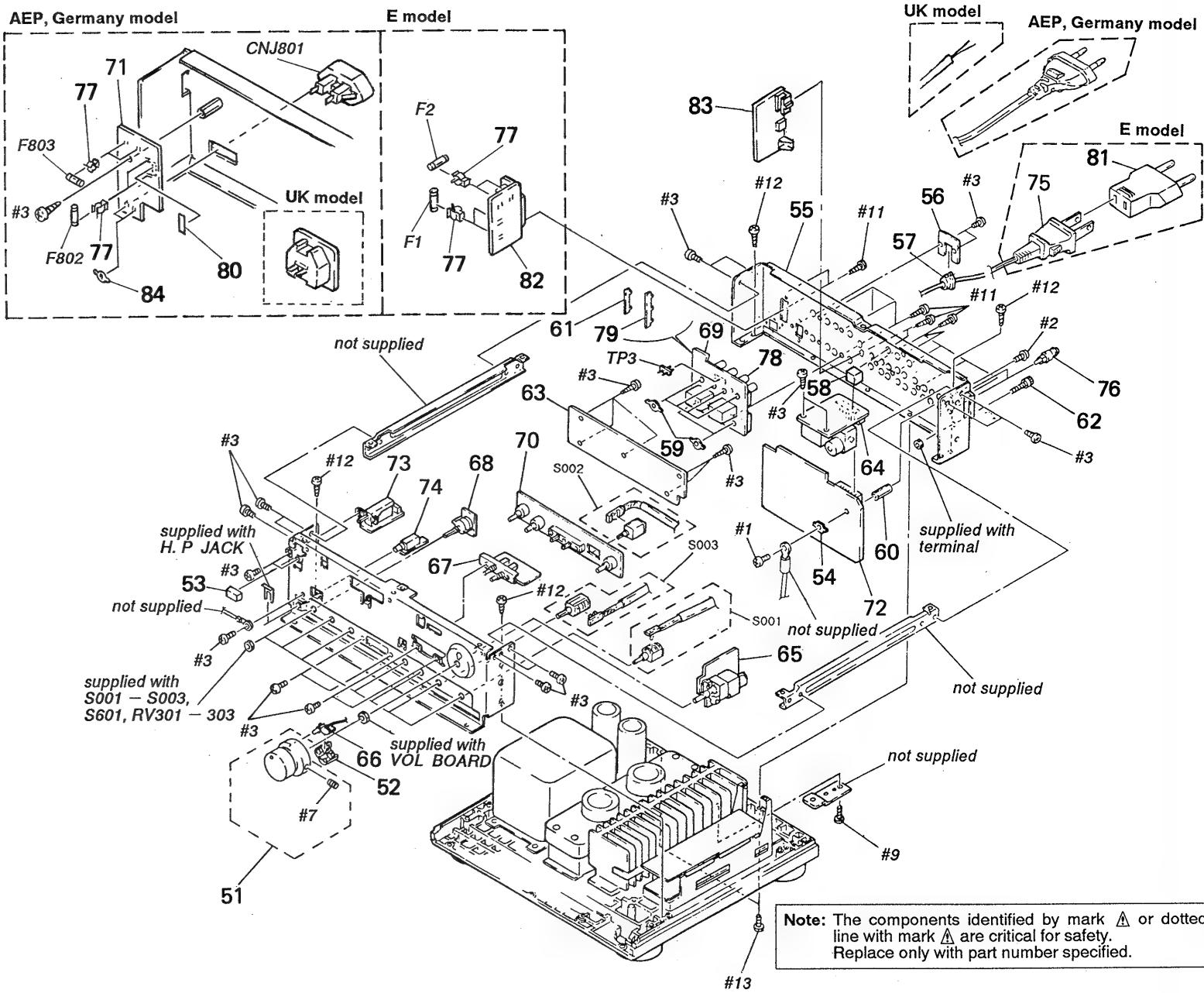
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

(1) CABINET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-4323-753-A	PANEL ASSY, FRONT (F333ESL)		11	4-942-226-11	ARM (R) (F770ES(GOLD)/F870ES(GOLD))	
1	A-4325-074-A	PANEL ASSY, FRONT (F770ES(BLACK))		12	X-4941-192-1	LID ASSY (E)	
1	A-4325-077-A	PANEL ASSY, FRONT (F770ES(GOLD))		12	4-946-474-01	LID (F770ES(BLACK)/F870ES(BLACK))	
1	A-4325-089-A	PANEL ASSY, FRONT (F870ES(BLACK))		12	4-946-474-11	LID (F770ES(GOLD)/F870ES(GOLD))	
1	A-4325-090-A	PANEL ASSY, FRONT (F870ES(GOLD))		13	4-942-241-01	KNOB (SQUARE) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
1	A-4325-233-A	PANEL ASSY, FRONT (F770ES)		13	4-942-241-11	KNOB (SQUARE) (F770ES(GOLD)/F870ES(GOLD))	
2	9-911-840-XX	CUSHION, RUBBER		14	4-942-240-01	KNOB (ROUND) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
3	4-942-225-01	ARM (L) (F333ESL/F770ES(BLACK)/F870ES(BLACK))		14	4-942-240-11	KNOB (ROUND) (F770ES(GOLD)/F870ES(GOLD))	
3	4-942-225-11	ARM (L) (F770ES(GOLD)/F870ES(GOLD))		15	4-942-228-01	KNOB (3X13) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
4	X-4941-153-1	PANEL (BASE) ASSY (F333ESL/F770ES(BLACK)) : AE2, UK		15	4-942-228-11	KNOB (3X13) (F770ES(GOLD)/F870ES(GOLD))	
4	X-4941-820-1	PANEL ASSY, BASE (F770ES(BLACK)) : AE1, Germany/E870ES(BLACK))		16	* 4-942-233-01	SPRING (L), PLATE	
4	X-4941-821-1	PANEL ASSY, BASE (F770ES(GOLD)/F870ES(GOLD))		17	4-931-641-01	BUTTON (DIA. 4) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
5	4-942-566-01	COVER, LED		17	4-931-641-11	BUTTON (DIA. 4) (F770ES(GOLD)/F870ES(GOLD))	
6	X-4885-922-1	PANEL (L) ASSY, SIDE (F770ES(BLACK)) : Germany/F870ES(BLACK))		18	* 4-942-234-01	SPRING (R), PLATE	
6	X-4941-857-1	PANEL (L) ASSY, SIDE (F333ESL/F770ES(BLACK)) : AEP		19	* 4-916-782-71	DAMPER (F333ESL/F770ES)	
6	X-4941-889-1	PANEL (L) ASSY, SIDE (F770ES(GOLD)/F870ES(GOLD))		19	* 4-929-218-11	DAMPER (F870ES)	
7	4-923-474-01	RING, ORNAMENTAL (F333ESL/F770ES(BLACK)/F870ES(BLACK))		20	* 4-929-217-01	CUSHION (F870ES)	
7	4-928-025-21	ESCUTCHEON (TOP PLATE) (F770ES(GOLD)/F870ES(GOLD))		21	* 4-916-761-01	SHEET, DAMPER (F870ES)	
8	* 4-931-944-31	CASE (F333ESL/F770ES(BLACK)/F870ES(BLACK))		22	4-916-782-21	SHEET (A) (F870ES)	
8	* 4-931-944-51	CASE (F770ES(GOLD)/F870ES(GOLD))		23	* 1-637-092-11	LED (P. L.) BOARD	
9	X-4885-823-1	PANEL (R) ASSY, SIDE (F770ES(GOLD)/F870ES(GOLD))		24	* 1-637-094-12	SW (F) BOARD	
9	X-4941-890-1	PANEL (R) ASSY, SIDE (F770ES(BLACK)) : Germany/F870ES(BLACK))		25	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
9	X-4941-958-1	PANEL (R) ASSY, SIDE (F333ESL/F770ES(BLACK)) : AEP		26	4-847-802-00	SCREW (UK)	
10	4-916-782-11	SHEET		26	4-885-979-11	SCREW (4X25) (AEP, E, Germany)	
11	4-942-226-01	ARM (R) (F333ESL/F770ES(BLACK)/F870ES(BLACK))		27	3-704-366-01	SCREW (CASE) (M3X8) (F333ESL/F770ES(BLACK)/F870ES(BLACK))	
27	3-704-366-11	SCREW (CASE) (M3X8) (F770ES(GOLD)/F870ES(GOLD))		28	* 1-637-095-11	EYE BOARD	
29	4-879-274-01	SPACER		29	4-879-274-01	SPACER	

(2) FRONT CHASSIS SECTION

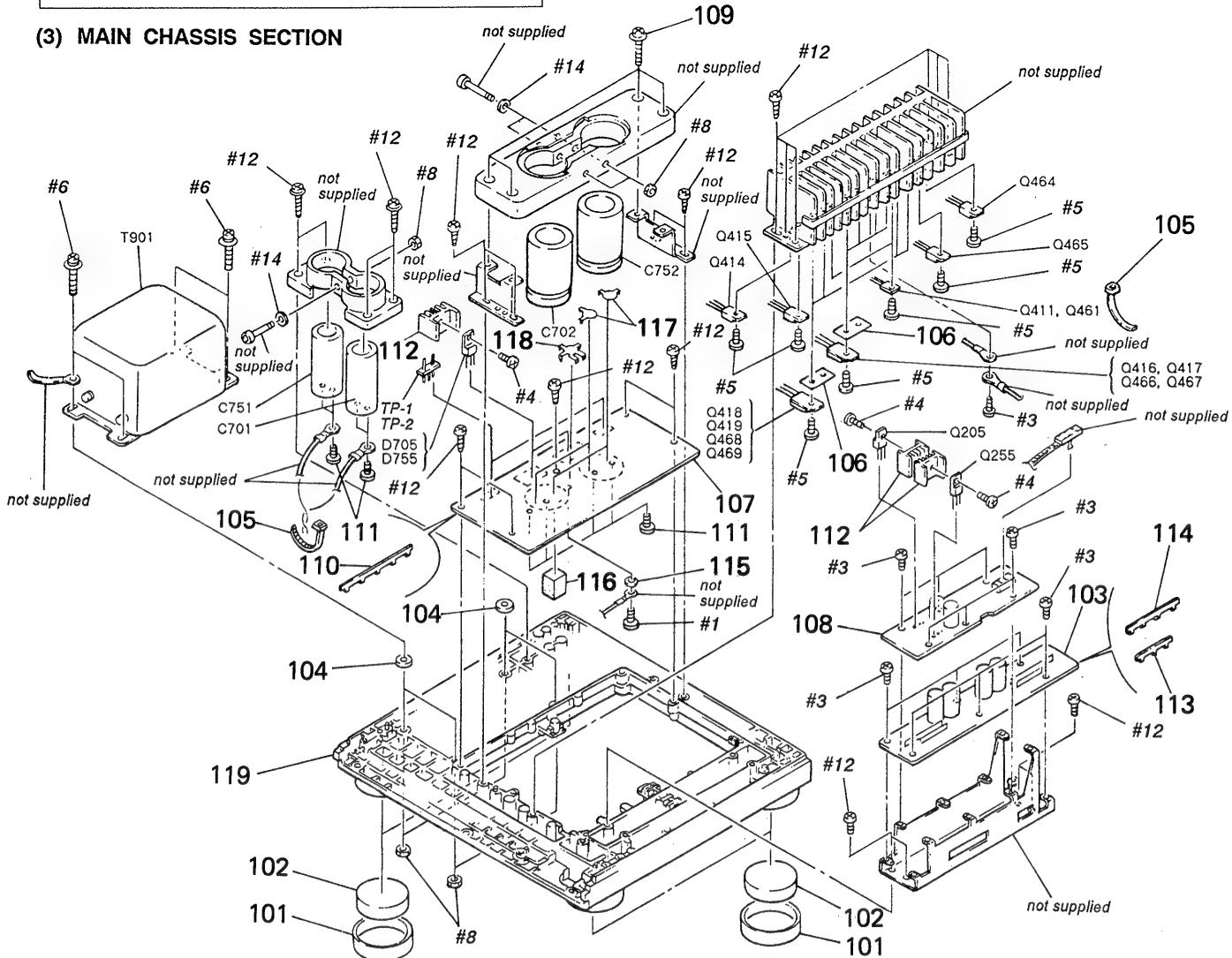


Note: The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-4941-154-1	KNOB (DIA. 55) ASSY (F333ESL/F770ES(BLACK)/F870ES(BLACK))		70	* 1-637-090-12	TONE BOARD	
51	X-4941-817-1	KNOB (DIA. 55) ASSY (F770ES(GOLD)/F870ES(GOLD))		71	* 1-640-345-11	OUTLET BOARD	(AEP, UK, Germany)
52	* 4-901-919-00	HOUSE, LED LAMP		72	* 1-637-091-12	INPUT BOARD	
53	4-942-032-01	KNOB (POWER) (F333ESL/F770ES(BLACK)/F870ES(BLACK))		73	* 1-637-085-11	AC SW BOARD	
53	4-942-032-11	KNOB (POWER) (F770ES(GOLD)/F870ES(GOLD))		74	* 1-637-086-11	H. P BOARD	
54	* 4-835-639-00	PLATE, GROUND		75	△ 1-559-272-21	CORD, POWER (UK)	
55	* 4-945-371-01	PANEL, BACK (F770ES(BLACK):Germany)		75	1-559-297-31	CODE, POWER (E)	
55	* 4-945-371-11	PANEL, BACK (UK)		75	△ 1-575-953-11	CORD, POWER (AEP, Germany)	
55	* 4-945-371-21	PANEL, BACK (F770ES(BLACK):AEP)		76	△ 1-506-113-00	SHORT PLUG	
55	* 4-945-371-31	PANEL, BACK (F770ES(GOLD)/F870ES(GOLD))		77	1-533-183-11	HOLDER, FUSE	
55	* 4-945-372-01	PANEL, BACK (E)		78	1-537-331-11	TERMINAL BOARD (SP) (Germany: F870ES)	
56	* 4-923-873-01	BRACKET, CORD STOPPER (F333ESL/F770ES(BLACK)/F870ES(BLACK))		78	* 1-537-378-11	TERMINAL BOARD (SP)	
56	* 4-923-873-11	BRACKET, CORD STOPPER (F770ES(GOLD)/F870ES(GOLD))		78	* 1-537-388-11	TERMINAL BOARD (SP) (AE2)	
57	2-352-626-01	BUSHING, CORD		79	* 1-560-242-11	BUS BAR 3P	
58	9-911-843-XX	CUSHION (TU)		80	3-701-947-18	LABEL, FUSE	
59	* 4-843-416-11	PLATE, FIXED, CAP		81	△ 1-569-007-11	ADAPTER, CONVERSION 2P (E)	
60	* 2-280-622-51	SUPPORT (M3). HEXAGON		82	* 1-637-837-12	V. S BOARD (E)	
61	* 1-560-242-61	BUS BAR 2P		83	* 1-639-110-11	PREOUT BOARD	
62	* 1-535-691-21	TERMINAL (F333ESL/F770ES)		84	* 4-923-814-01	PLATE, CONNECTION (AEP, UK, Germany)	
62	* 1-535-691-31	TERMINAL (F870ES)		CNJ801	△ 1-526-794-11	OUTLET, AC (AEP, Germany)	
63	* A-4345-485-A	CONTROL BOARD, COMPLETE		CNJ801	△ 1-526-751-00	OUTLET, AC (UK)	
64	* 1-637-081-11	FUNCTION BOARD (F870ES)		F1	△ 1-532-350-00	FUSE, TIME-LAG 4A (F333ESL/F770ES)	
64	* 1-637-081-13	FUNCTION BOARD (F333ESL/F770ES)		F2	△ 1-532-350-00	FUSE, TIME-LAG 4A (F333ESL/F770ES)	
65	* 1-637-082-12	VOL BOARD		F802	△ 1-532-299-00	FUSE, TIME-LAG 5A (F870ES)	
66	* 1-637-084-11	LED (VOL) BOARD		F802	△ 1-532-350-00	FUSE, TIME-LAG 4A (F333ESL/F770ES)	
67	* 1-637-087-11	S. D BOARD		F803	△ 1-532-286-00	FUSE, TIME-LAG 2.5A (F770ES/F870ES)	
68	* 1-637-088-12	SP-SW BOARD		S001	1-572-546-11	SWITCH, ROTARY SLIDE (REMOTE)	
69	* 1-637-089-12	SP TERMINAL BOARD		S002	1-572-547-11	SWITCH, ROTARY SLIDE (REMOTE)	
				S003	1-572-548-11	SWITCH, ROTARY SLIDE (REMOTE)	
				TP3	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P	

Note: The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

(3) MAIN CHASSIS SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	4-931-966-11	RING, ORNAMENTAL (F870ES(GOLD))		C701	1-125-653-11	CAP, ELECT 8200MF (F870ES)	
101	4-931-967-02	RING, ORNAMENTAL (F333ESL/F770ES(BLACK))		C701	1-125-654-11	CAP, ELECT 8200MF (F333ESL/F770ES)	
101	4-931-967-21	RING, ORNAMENTAL (F770ES(GOLD))		C702	1-125-655-11	CAP, ELECT 22000MF (F870ES)	
101	9-910-999-33	RING, ORNAMENTAL (F870ES(BLACK))		C702	1-125-656-11	CAP, ELECT 18000MF (F333ESL/F770ES)	
102	4-908-888-01	FOOT, TUNING (F333ESL/F770ES)		C751	1-125-653-11	CAP, ELECT 8200MF (F870ES)	
102	4-908-888-11	FOOT, TUNING (F870ES)		C751	1-125-654-11	CAP, ELECT 8200MF (F333ESL/F770ES)	
103	* A-4345-325-A	MAIN (A) BOARD, COMPLETE (E333ESL/F770ES:AEP, UK)		C752	1-125-656-11	CAP, ELECT 18000MF (F333ESL/F770ES)	
103	* A-4345-331-A	MAIN (A) BOARD, COMPLETE (F770ES:Germany)		C752	1-125-655-11	CAP, ELECT 22000MF (F870ES)	
103	* A-4345-358-A	MAIN (A) BOARD, COMPLETE (F870ES)		D705	8-719-300-27	DIODE CTU-22S	
104	4-931-976-01	WASHER (BS)		D755	8-719-300-25	DIODE CTU-22R	
105	3-655-653-21	BAND (TATTON), BINDING		Q205	8-729-127-53	TRANSISTOR 2SC2275-P	
106	4-901-949-01	SHEET, INSULATING		Q255	8-729-141-10	TRANSISTOR 2SA985-P	
107	* A-4345-326-A	MAIN (B) BOARD, COMPLETE (E333ESL/F770ES:AEP, UK)		Q411	8-729-203-45	TRANSISTOR 2SC3423-0	
107	A-4345-332-A	MAIN (B) BOARD, COMPLETE (F770ES:Germany)		Q414	8-729-208-72	TRANSISTOR 2SD1763A	
107	* A-4345-359-A	MAIN (B) BOARD, COMPLETE (F870ES)		Q415	8-729-208-38	TRANSISTOR 2SA1306A-0	
108	* A-4345-327-A	EQ BOARD, COMPLETE (E333ESL/F770ES:AEP, UK)		Q416	8-729-232-45	TRANSISTOR 2SK1529-Y	
108	* A-4345-333-A	EQ BOARD, COMPLETE (F770ES:Germany)		Q417	8-729-232-45	TRANSISTOR 2SK1529-Y	
108	* A-4345-360-A	EQ BOARD, COMPLETE (F870ES)		Q418	8-729-232-46	TRANSISTOR 2SJ200-Y	
109	4-921-437-01	SCREW (M3X20), TAPPING		Q419	8-729-232-46	TRANSISTOR 2SJ200-Y	
110	* 1-560-242-31	BUS BAR 5P		Q461	8-729-203-45	TRANSISTOR 2SC3423-0	
111	* 4-931-964-01	SCREW (M4X6)		Q464	8-729-208-72	TRANSISTOR 2SD1763A	
112	* 4-921-402-01	HEAT SINK		Q465	8-729-208-38	TRANSISTOR 2SA1306A-0	
113	* 1-560-242-11	BUS BAR 3P		Q466	8-729-232-45	TRANSISTOR 2SK1529-Y	
114	* 1-560-242-21	BUS BAR 4P		Q467	8-729-232-45	TRANSISTOR 2SK1529-Y	
115	4-309-378-00	WASHER		Q468	8-729-232-46	TRANSISTOR 2SJ200-Y	
116	* 4-931-970-01	CUSHION		Q469	8-729-232-46	TRANSISTOR 2SJ200-Y	
117	* 3-346-266-21	PLATE, GROUND		T901	△1-450-485-11	TRANSFORMER, POWER (UK)	
118	* 4-916-791-01	PLATE, GROUND, 5P		T901	△1-450-486-11	TRANSFORMER, POWER (F333ESL)	
119	X-4941-233-1	CHASSIS ASSY (F333ESL/F770ES)		T901	△1-450-487-11	TRANSFORMER, POWER (AE1, Germany:F770ES)	
119	X-4941-234-1	CHASSIS ASSY (F870ES)		T901	△1-450-488-11	TRANSFORMER, POWER (AE2, AEP:F770ES)	
117				T901	△1-450-489-11	TRANSFORMER, POWER (Germany:F870ES)	
118				TP1	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)	
119				TP2	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)	

SECTION 7

ELECTRICAL PARTS LIST

MAIN (A)**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- **RESISTORS**
All resistors are in ohms.
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- **SEMICONDUCTORS**
In each case, u: μ , for example:
uA...: μ A...; uPA...: μ PA...
uPB...: μ PB...; uPC...: μ PC...
uPD...: μ PD...
- **CAPACITORS**
uF: μ F
- **COILS**
uH: μ H

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

When including parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
		* A-4345-325-A MAIN (A) BOARD, COMPLETE				C453	1-104-319-11	POLYSTYRENE	10000PF	10%	125V(F870ES)
		***** (F333ESL/F770ES:AEP, UK)				C453	1-137-337-21	FILM	0.068uF	2%	100V(F333ESL/F770ES)
		* A-4345-331-A MAIN (A) BOARD, COMPLETE(F770ES:Germany)				C454	1-107-044-00	MICA	3.3PF		500V
		*****				C455	1-124-918-11	ELECT	47uF	20%	63V
		* A-4345-358-A MAIN (A) BOARD, COMPLETE (F870ES)				C456	1-124-918-11	ELECT	47uF	20%	63V
		*****				C457	1-104-274-11	POLYSTYRENE	47PF	10%	50V
		* 1-560-242-11 BUS BAR 3P				C458	1-124-748-11	ELECT	22uF	20%	100V
		* 1-560-242-21 BUS BAR 4P				C460	1-104-321-11	POLYSTYRENE	22PF	10%	400V(F870ES)
		< CAPACITOR >				C460	1-104-327-11	POLYSTYRENE	22PF	10%	125V
		(F333ESL/F770ES)				C461	1-124-130-00	ELECT	100uF	20%	63V
C401	1-104-321-11	POLYSTYRENE	22PF	10%	400V(F870ES)	C462	1-124-130-00	ELECT	100uF	20%	63V
C401	1-104-327-11	POLYSTYRENE	22PF	10%	125V	C468	1-124-922-11	ELECT	1000uF	20%	63V
C402	1-104-233-00	POLYSTYRENE	220PF	10%	125V(F870ES)	C469	1-124-922-11	ELECT	1000uF	20%	63V
C402	1-104-286-11	POLYSTYRENE	220PF	5%	50V	< DIODE >					
C403	1-104-319-11	POLYSTYRENE	10000PF	10%	125V(F870ES)	D401	8-719-933-41	DIODE	HZS6C3L		
C403	1-137-337-21	FILM	0.068uF	2%	100V(F333ESL/F770ES)	D402	8-719-200-82	DIODE	11ES2 (F870ES)		
C404	1-107-044-00	MICA	3.3PF		500V	D402	8-719-912-20	DIODE	1SS120 (F333ESL/F770ES)		
C405	1-124-918-11	ELECT	47uF	20%	63V	D403	8-719-200-82	DIODE	11ES2 (F870ES)		
C406	1-124-918-11	ELECT	47uF	20%	63V	D403	8-719-912-20	DIODE	1SS120 (F333ESL/F770ES)		
C407	1-104-274-11	POLYSTYRENE	47PF	10%	50V	D409	8-719-815-85	DIODE	1S1585		
	(F770ES:Germany/F870ES)					D410	8-719-815-85	DIODE	1S1585		
C408	1-124-748-11	ELECT	22uF	20%	100V	D418	8-719-303-13	DIODE	SEL1210W		
C410	1-104-321-11	POLYSTYRENE	22PF	10%	400V(F870ES)	D451	8-719-933-41	DIODE	HZS6C3L		
C410	1-104-327-11	POLYSTYRENE	22PF	10%	125V	D452	8-719-200-82	DIODE	11ES2 (F870ES)		
C411	1-124-130-00	ELECT	100uF	20%	63V	D452	8-719-912-20	DIODE	1SS120 (F333ESL/F770ES)		
C412	1-124-130-00	ELECT	100uF	20%	63V	D453	8-719-200-82	DIODE	11ES2 (F870ES)		
C418	1-124-922-11	ELECT	1000uF	20%	63V	D453	8-719-912-20	DIODE	1SS120 (F333ESL/F770ES)		
C419	1-124-922-11	ELECT	1000uF	20%	63V	D459	8-719-815-85	DIODE	1S1585		
C451	1-104-321-11	POLYSTYRENE	22PF	10%	400V(F870ES)	D460	8-719-815-85	DIODE	1S1585		
C451	1-104-327-11	POLYSTYRENE	22PF	10%	125V	D468	8-719-303-13	DIODE	SEL1210W		
C452	1-104-233-00	POLYSTYRENE	220PF	10%	125V(F870ES)	< CONNECTOR >					
C452	1-104-286-11	POLYSTYRENE	220PF	5%	50V	EH15	* 1-564-507-11	PLUG, CONNECTOR	4P		
	(F333ESL/F770ES)					EH21	* 1-564-507-11	PLUG, CONNECTOR	4P		
						EH22	* 1-564-507-11	PLUG, CONNECTOR	4P		
						EH23	* 1-564-506-11	PLUG, CONNECTOR	3P		
						EH24	* 1-564-508-11	PLUG, CONNECTOR	5P		

MAIN (A)

MAIN (B)

Ref. No.	Part No.	Description		Remark	Ref. No.	Part No.	Description		Remark
< COIL >									
L402	* 1-428-203-11	COIL, AIR-CORE			R445	1-219-022-11	FUSIBLE	100	5% 1/2W
L403	* 1-428-203-11	COIL, AIR-CORE			R451	1-246-545-00	CARBON	1.0M	5% 1/4W
L452	* 1-428-203-11	COIL, AIR-CORE			R452	1-247-713-11	CARBON	1K	5% 1/4W
L453	* 1-428-203-11	COIL, AIR-CORE			R453	1-249-520-11	CARBON	47	5% 1/4W
					R454	1-249-520-11	CARBON	47	5% 1/4W
< TRANSISTOR >									
Q401	8-729-203-21	TRANSISTOR 2SK389-GR			R455	1-247-717-11	CARBON	2.2K	5% 1/4W
Q402	8-729-281-54	TRANSISTOR 2SC1815-BL			R456	1-246-531-00	CARBON	270K	5% 1/4W
Q403	8-729-281-54	TRANSISTOR 2SC1815-BL			R457	1-247-704-11	CARBON	220	5% 1/4W
Q404	8-729-232-00	TRANSISTOR 2SA1349-GRBL			R458	1-219-030-11	FUSIBLE	220	5% 1/2W
Q405	8-729-209-17	TRANSISTOR 2SA1360-0			R459	1-219-030-11	FUSIBLE	220	5% 1/2W
Q406	8-729-104-91	TRANSISTOR 2SA1383			R460	1-214-937-00	METAL	1M	1% 1/2W
Q407	8-729-201-56	TRANSISTOR 2SK246-GR2			R462	1-219-010-11	FUSIBLE	33	5% 1/2W
Q408	8-729-104-18	TRANSISTOR 2SC3514			R463	1-249-490-11	CARBON	27K	5% 1/2W
Q409	8-729-104-18	TRANSISTOR 2SC3514			R464	1-247-704-11	CARBON	220	5% 1/4W
Q451	8-729-203-21	TRANSISTOR 2SK389-GR			R465	1-246-531-00	CARBON	270K	5% 1/4W
Q452	8-729-281-54	TRANSISTOR 2SC1815-BL			R466	1-247-740-11	CARBON	120	5% 1/2W (F333ESL/F770ES)
Q453	8-729-281-54	TRANSISTOR 2SC1815-BL			R466	1-259-533-11	CARBON	120	1% 1/2W (F870ES)
Q454	8-729-232-00	TRANSISTOR 2SA1349-GRBL			R467	1-259-580-11	CARBON	11K	5% 1/2W
Q455	8-729-209-17	TRANSISTOR 2SA1360-0			R468	1-259-580-11	CARBON	11K	5% 1/2W
Q456	8-729-104-91	TRANSISTOR 2SA1383			R469	1-259-503-11	CARBON	4.7M	5% 1/2W
Q457	8-729-201-56	TRANSISTOR 2SK246-GR2			R470	1-249-556-11	CARBON	1.5K	5% 1/4W
Q458	8-729-104-18	TRANSISTOR 2SC3514			R471	1-247-721-11	CARBON	4.7K	5% 1/4W
Q459	8-729-104-18	TRANSISTOR 2SC3514			R472	1-219-022-11	FUSIBLE	100	5% 1/2W
< RESISTOR >									
R401	1-246-545-00	CARBON	1.0M	5% 1/4W	R470	1-219-024-91	FUSIBLE	120	5% 1/2W
R402	1-247-713-11	CARBON	1K	5% 1/4W	R471	1-219-024-91	FUSIBLE	120	5% 1/2W
R403	1-249-520-11	CARBON	47	5% 1/4W	< VARIABLE RESISTOR >				
R404	1-249-520-11	CARBON	47	5% 1/4W	RT401	1-237-498-21	RES, ADJ, METAL FILM	220	
R405	1-247-717-11	CARBON	2.2K	5% 1/4W	RT451	1-237-498-21	RES, ADJ, METAL FILM	220	

R406	1-246-531-00	CARBON	270K	5% 1/4W	* A-4345-326-A MAIN (B) BOARD, COMPLETE				
R407	1-247-704-11	CARBON	220	5% 1/4W	*****				
R408	1-219-030-11	FUSIBLE	220	5% 1/2W	(F333ESL/F770ES:AEP, UK)				
R409	1-219-030-11	FUSIBLE	220	5% 1/2W	* A-4345-332-A MAIN (B) BOARD, COMPLETE(F770ES:Germany)				
R410	1-214-937-00	METAL	1M	1% 1/2W	*****				
R412	1-219-010-11	FUSIBLE	33	5% 1/2W	* A-4345-359-A MAIN (B) BOARD, COMPLETE (F870ES)				
R413	1-249-490-11	CARBON	27K	5% 1/2W	*****				
R414	1-247-704-11	CARBON	220	5% 1/4W	* 1-560-242-31 BUS BAR 5P				
R415	1-246-531-00	CARBON	270K	5% 1/4W	* 3-346-266-21 PLATE, GROUND				
R416	1-247-740-11	CARBON	120	5% 1/2W (F333ESL/F770ES)	* 4-916-791-01 PLATE, GROUND, 5P				
R416	1-259-533-11	CARBON	120	1% 1/2W (F870ES)	* 4-921-402-01 HEAT SINK				
R417	1-259-580-11	CARBON	11K	5% 1/2W	7-682-548-09 SCREW +B 3X8				
R418	1-259-580-11	CARBON	11K	5% 1/2W	< CAPACITOR >				
R419	1-259-503-11	CARBON	4.7M	5% 1/2W	* C416 1-136-161-00 FILM 0.047uF 5% 50V				
R420	1-249-556-11	CARBON	1.5K	5% 1/4W	* C417 1-136-161-00 FILM 0.047uF 5% 50V				
R421	1-247-721-11	CARBON	4.7K	5% 1/4W					
R422	1-219-022-11	FUSIBLE	100	5% 1/2W					
R444	1-219-022-11	FUSIBLE	100	5% 1/2W					

MAIN (B)

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark	
C422	1-136-161-00	FILM	0.047uF	5%	50V			< TRANSISTOR >				
C423	1-161-379-00	CERAMIC	0.01uF	20%	25V	(F770ES:Germany/F870ES)		Q410	8-729-209-17	TRANSISTOR 2SA1360-0		
C466	1-136-161-00	FILM	0.047uF	5%	50V		Q420	8-729-140-82	TRANSISTOR 2SA988-PAFAEA			
C467	1-136-161-00	FILM	0.047uF	5%	50V		Q460	8-729-209-17	TRANSISTOR 2SA1360-0			
C472	1-136-161-00	FILM	0.047uF	5%	50V		Q470	8-729-140-82	TRANSISTOR 2SA988-PAFAEA			
C601	1-123-334-00	ELECT	220uF	20%	25V			< RESISTOR >				
C602	1-136-157-00	FILM	0.022uF	5%	50V		R423	1-247-714-11	CARBON	1.2K	5%	1/4W
C603	1-136-157-00	FILM	0.022uF	5%	50V		R424	1-247-719-11	CARBON	3.3K	5%	1/4W
C604	1-124-122-11	ELECT	100uF	20%	50V(F870ES)		R425	1-247-711-11	CARBON	680	5%	1/4W
C604	1-124-910-11	ELECT	47uF	20%	50V(F333ESL/F770ES)		R427	1-219-022-11	FUSIBLE	100	5%	1/2W
C606	1-123-380-00	ELECT	1uF	20%	100V		R428	1-219-022-11	FUSIBLE	100	5%	1/2W
C607	1-126-066-11	ELECT	470uF	20%	63V		R429	1-219-030-11	FUSIBLE	220	5%	1/2W
C703	1-128-201-11	ELECT	100uF	20%	63V(F870ES)		R430	1-212-974-00	FUSIBLE	47	5%	1/2W
C703	1-124-920-11	ELECT	330uF	20%	63V(F333ESL/F770ES)		R431	1-212-974-00	FUSIBLE	47	5%	1/2W
C705	1-137-213-11	FILM	2.2uF	5%	100V		R432	1-212-974-00	FUSIBLE	47	5%	1/2W
C753	1-124-920-11	ELECT	330uF	20%	63V(F333ESL/F770ES)		R433	1-212-974-00	FUSIBLE	47	5%	1/2W
C753	1-128-201-11	ELECT	100uF	20%	63V(F870ES)		R434	1-217-151-00	RES, METAL PLATE 0.22			
		< DIODE >				R435	1-217-151-00	RES, METAL PLATE 0.22				
D405	8-719-912-20	DIODE 1SS120				R436	1-217-151-00	RES, METAL PLATE 0.22				
D406	8-719-985-53	DIODE HZS4ALL				R437	1-217-151-00	RES, METAL PLATE 0.22				
D408	8-719-303-13	DIODE SEL1210W				R438	▲1-247-692-11	CARBON	22	5%	1/4W F	
D411	8-719-912-20	DIODE 1SS120				R439	▲1-247-692-11	CARBON	22	5%	1/4W F	
D412	8-719-985-53	DIODE HZS4ALL				R440	▲1-247-717-11	CARBON	2.2K	5%	1/4W F	
D415	8-719-912-20	DIODE 1SS120				R441	1-249-460-11	CARBON	15K	5%	1/4W	
D416	8-719-912-20	DIODE 1SS120				R442	1-219-002-11	FUSIBLE	15	5%	1/2W	
D455	8-719-912-20	DIODE 1SS120				R447	1-247-711-11	CARBON	680	5%	1/4W	
D456	8-719-985-53	DIODE HZS4ALL				R449	1-219-002-11	FUSIBLE	15	5%	1/2W	
D458	8-719-303-13	DIODE SEL1210W				R473	1-247-714-11	CARBON	1.2K	5%	1/4W	
D461	8-719-912-20	DIODE 1SS120				R474	1-247-719-11	CARBON	3.3K	5%	1/4W	
D462	8-719-985-53	DIODE HZS4ALL				R475	1-247-711-11	CARBON	680	5%	1/4W	
D465	8-719-912-20	DIODE 1SS120				R477	1-219-022-11	FUSIBLE	100	5%	1/2W	
D466	8-719-912-20	DIODE 1SS120				R478	1-219-022-11	FUSIBLE	100	5%	1/2W	
D601	8-719-200-82	DIODE 11ES2				R479	1-219-030-11	FUSIBLE	220	5%	1/2W	
D602	8-719-200-82	DIODE 11ES2				R480	1-212-974-00	FUSIBLE	47	5%	1/2W	
D603	8-719-200-82	DIODE 11ES2				R481	1-212-974-00	FUSIBLE	47	5%	1/2W	
D701	8-719-230-02	DIODE 30DF2				R482	1-212-974-00	FUSIBLE	47	5%	1/2W	
D702	8-719-230-02	DIODE 30DF2				R483	1-212-974-00	FUSIBLE	47	5%	1/2W	
D703	8-719-230-02	DIODE 30DF2				R484	1-217-151-00	RES, METAL PLATE 0.22				
D704	8-719-230-02	DIODE 30DF2				R485	1-217-151-00	RES, METAL PLATE 0.22				
D705	8-719-300-27	DIODE CTU-22S				R486	1-217-151-00	RES, METAL PLATE 0.22				
D755	8-719-300-25	DIODE CTU-22R				R487	1-217-151-00	RES, METAL PLATE 0.22				
		< CONNECTOR >				R488	▲1-247-692-11	CARBON	22	5%	1/4W F	
EH25	* 1-564-508-11	PLUG, CONNECTOR 5P				R489	▲1-247-692-11	CARBON	22	5%	1/4W F	
EH41	* 1-564-505-11	PLUG, CONNECTOR 2P				R490	▲1-247-717-11	CARBON	2.2K	5%	1/4W F	
		< IC >				R491	1-249-460-11	CARBON	15K	5%	1/4W	
IC601	8-759-111-68	IC uPC1237HA				R492	1-219-002-11	FUSIBLE	15	5%	1/2W	
						R497	1-247-711-11	CARBON	680	5%	1/4W	
						R499	1-219-002-11	FUSIBLE	15	5%	1/2W	
						R601	1-247-891-00	CARBON	330K	5%	1/4W	

Note: The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark	
R602	1-247-887-00	CARBON	220K	5%	1/4W	C207	1-137-333-31	FILM	0.056uF	2%	100V(F870ES)	
R603	1-247-725-11	CARBON	10K	5%	1/4W	C207	1-137-335-31	FILM	0.056uF	2%	630V(F333ESL/F770ES)	
R604	1-249-461-11	CARBON	18K	5%	1/4W	C209	1-124-922-11	ELECT	1000uF	20%	63V(F870ES)	
R605	1-249-606-11	CARBON	180K	5%	1/4W (F870ES)	C209	1-126-066-11	ELECT	470uF	20%	63V(F333ESL/F770ES)	
R605	1-249-609-11	CARBON	240K	5%	1/4W(F333ESL/F770ES)	C211	1-124-122-11	ELECT	100uF	20%	50V	
R617	1-249-462-11	CARBON	22K	5%	1/4W	C212	1-123-604-00	ELECT	220uF	20%	63V	
R651	1-247-891-00	CARBON	330K	5%	1/4W	C213	1-101-880-00	CERAMIC	47PF	5%	50V	
R652	1-247-721-11	CARBON	4.7K	5%	1/4W	(F770ES:Germany/F870ES)						
R653	△1-212-934-00	FUSIBLE	1	5%	1/2W F	C214	1-161-379-00	CERAMIC	0.01uF	20%	25V	
< VARIABLE RESISTOR >												
RT402	1-224-249-XX	RES, ADJ, SOLID 1K				C251	1-104-290-11	POLYSTYRENE	330PF	5%	50V	
RT452	1-224-249-XX	RES, ADJ, SOLID 1K				(F333ESL/F770ES:AEP, UK)						
< CONNECTOR >												
SE1	1-564-242-00	PIN, CONNECTOR 5P				C252	1-137-336-91	FILM	0.022uF	2%	100V	
< BASE POST >												
TP1	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)				C253	1-124-748-11	ELECT	22uF	20%	100V(F870ES)	
TP2	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P (F870ES)				C253	1-124-916-11	ELECT	22uF	20%	63V(F333ESL/F770ES)	
< CONNECTOR >												
VH4	* 1-564-104-00	PIN, CONNECTOR 3P				C254	1-126-359-11	ELECT	47uF	20%	80V(F870ES)	
VH5	* 1-564-241-00	PIN, CONNECTOR 4P				C256	1-137-332-31	FILM	0.016uF	2%	100V(F870ES)	
VH6	* 1-564-241-00	PIN, CONNECTOR 4P				C256	1-137-334-31	FILM	0.016uF	2%	630V(F333ESL/F770ES)	

* A-4345-327-A EQ BOARD, COMPLETE												

(F333ESL/F770ES:AEP, UK)												
* A-4345-333-A EQ BOARD, COMPLETE (F770ES:Germany)												

* A-4345-360-A EQ BOARD, COMPLETE (F870ES)												

* 4-921-402-01 HEAT SINK												
7-682-548-09 SCREW +B 3X8												
< CAPACITOR >												
C201	1-104-278-11	POLYSTYRENE	100PF	5%	50V	IC201	8-759-711-53	IC	NJM2068S-D			
		(F770ES:Germany/F870ES)				IC251	8-759-711-53	IC	NJM2068S-D			
C201	1-104-290-11	POLYSTYRENE	330PF	5%	50V	< TRANSISTOR >						
		(F333ESL/F770ES:AEP, UK)				Q201	8-729-214-73	TRANSISTOR	2SK147-V			
C202	1-137-336-91	FILM	0.022uF	2%	100V		(F770ES:Germany/F870ES)					
C203	1-124-748-11	ELECT	22uF	20%	100V(F870ES)	Q201	8-729-217-04	TRANSISTOR	2SK170-V			
		(F333ESL/F770ES:AEP, UK)				Q202	8-729-203-45	TRANSISTOR	2SC3423-0			
C203	1-124-916-11	ELECT	22uF	20%	63V(F333ESL/F770ES)	Q203	8-729-281-54	TRANSISTOR	2SC1815-BL			
C204	1-124-918-11	ELECT	47uF	20%	63V(F333ESL/F770ES)	Q204	8-729-201-56	TRANSISTOR	2SK246-GR2			
C204	1-126-359-11	ELECT	47uF	20%	80V(F870ES)							
C206	1-137-332-31	FILM	0.016uF	2%	100V(F870ES)							
C206	1-137-334-31	FILM	0.016uF	2%	630V(F333ESL/F770ES)							

Note: The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

EQ | FUNCTION

Ref. No.	Part No.	Description		Remark	Ref. No.	Part No.	Description		Remark
Q205	8-729-127-53	TRANSISTOR	2SC2275-P		R225	1-219-024-91	FUSIBLE	120	5% 1/2W
Q206	8-729-201-56	TRANSISTOR	2SK246-GR2		R251	1-249-465-11	CARBON	47K	5% 1/4W
Q207	8-729-281-54	TRANSISTOR	2SC1815-BL		R252	1-247-706-11	CARBON	330	5% 1/4W
Q208	8-729-281-54	TRANSISTOR	2SC1815-BL		R253	1-247-713-11	CARBON	1K	5% 1/4W
Q209	8-729-214-73	TRANSISTOR	2SK147-V (F770ES:Germany/F870ES)		R254	1-247-700-11	CARBON	100	5% 1/4W
Q209	8-729-217-04	TRANSISTOR	2SK170-V (F333ESL/F770ES:AEP, UK)		R255	1-247-128-00	CARBON	750	5% 1/4W
Q251	8-729-214-73	TRANSISTOR	2SK147-V (F770ES:Germany/F870ES)		R256	1-247-128-00	CARBON	750	5% 1/4W
Q251	8-729-217-04	TRANSISTOR	2SK170-V (F333ESL/F770ES:AEP, UK)		R257	1-247-700-11	CARBON (F333ESL/F770ES:AEP, UK)	100	5% 1/4W
Q252	8-729-203-45	TRANSISTOR	2SC3423-0		R257	1-249-512-11	CARBON (F770ES:Germany/F870ES)	22	5% 1/4W
Q253	8-729-281-54	TRANSISTOR	2SC1815-BL		R258	1-247-708-11	CARBON	470	5% 1/4W
Q254	8-729-201-56	TRANSISTOR	2SK246-GR2		R259	1-249-518-11	CARBON	39	5% 1/4W
Q255	8-729-141-10	TRANSISTOR	2SA985-QP		R260	1-247-704-11	CARBON	220	5% 1/4W
Q256	8-729-201-56	TRANSISTOR	2SK246-GR2		R261	1-247-721-11	CARBON	4.7K	5% 1/4W
Q257	8-729-201-53	TRANSISTOR	2SA1015-GR		R262	1-246-545-00	CARBON	1.0M	5% 1/4W
Q258	8-729-201-53	TRANSISTOR	2SA1015-GR		R263	1-249-844-11	CARBON	56K	1% 1/2W
Q259	8-729-214-73	TRANSISTOR	2SK147-V (F770ES:Germany/F870ES)		R264	1-247-700-11	CARBON	100	5% 1/4W
Q259	8-729-217-04	TRANSISTOR	2SK170-V (F333ESL/F770ES:AEP, UK)		R265	1-259-571-11	CARBON	4.7K	1% 1/2W (F870ES)
< RESISTOR >					R265	1-249-818-11	CARBON	4.7K	1% 1/2W (F333ESL/F770ES)
R201	1-249-465-11	CARBON	47K	5% 1/4W	R267	1-260-661-11	CARBON	6.8	5% 1/4W
R202	1-247-706-11	CARBON	330	5% 1/4W	R268	1-247-700-11	CARBON	100	5% 1/4W
R203	1-247-713-11	CARBON	1K	5% 1/4W	R269	1-247-704-11	CARBON	220	5% 1/4W
R204	1-247-700-11	CARBON	100	5% 1/4W	R270	1-247-725-11	CARBON	10K	5% 1/4W
R205	1-247-128-00	CARBON	750	5% 1/4W	R271	1-247-704-11	CARBON	220	5% 1/4W
R206	1-247-128-00	CARBON	750	5% 1/4W	R272	1-247-717-11	CARBON	2.2K	5% 1/4W
R207	1-247-700-11	CARBON (F333ESL/F770ES:AEP, UK)	100	5% 1/4W	R273	1-247-723-11	CARBON	6.8K	5% 1/4W
R207	1-249-512-11	CARBON (F770ES:Germany/F870ES)	22	5% 1/4W	R274	1-247-713-11	CARBON	1K	5% 1/4W
R208	1-247-708-11	CARBON	470	5% 1/4W	R275	1-219-024-91	FUSIBLE	120	5% 1/2W
R209	1-249-518-11	CARBON	39	5% 1/4W	< SWITCH >				
R210	1-247-704-11	CARBON	220	5% 1/4W	S201	1-554-019-21	SWITCH, SLIDE (REMOTE TYPE) (CARTRIDGE LOAD)		
R211	1-247-721-11	CARBON	4.7K	5% 1/4W	*****				
R212	1-246-545-00	CARBON	1.0M	5% 1/4W	* 1-637-081-11 FUNCTION BOARD (F870ES)				
R213	1-249-844-11	CARBON	56K	1% 1/2W	*****				
R214	1-247-700-11	CARBON	100	5% 1/4W	* 1-637-081-13 FUNCTION BOARD (F333ESL/F770ES)				
R215	1-249-818-11	CARBON	4.7K	1% 1/2W (F333ESL/F770ES)	*****				
R215	1-259-571-11	CARBON	4.7K	1% 1/2W (F870ES)	* 1-564-599-11 PIN, CONNECTOR 8P				
R217	1-260-661-11	CARBON	6.8	5% 1/4W	*****				
R218	1-247-700-11	CARBON	100	5% 1/4W	< CAPACITOR >				
R219	1-247-704-11	CARBON	220	5% 1/4W	C916	1-124-631-11	ELECT 47uF	20%	16V
R220	1-247-725-11	CARBON	10K	5% 1/4W	< CONNECTOR >				
R221	1-247-704-11	CARBON	220	5% 1/4W	EH16	* 1-564-506-11	PLUG, CONNECTOR 3P		
R222	1-247-717-11	CARBON	2.2K	5% 1/4W	EH35	* 1-564-512-11	PLUG, CONNECTOR 9P		
R223	1-247-723-11	CARBON	6.8K	5% 1/4W	EH40	* 1-564-505-11	PLUG, CONNECTOR 2P		
R224	1-247-713-11	CARBON	1K	5% 1/4W	EH42	* 1-564-506-11	PLUG, CONNECTOR 3P		

FUNCTION	AC SW	H.P	VOL	LED (VOL)	S.D
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< SWITCH >		EH37	* 1-564-505-11	PLUG, CONNECTOR 2P	
S101	1-572-096-11	SWITCH, ROTARY (WITH MOTOR) (F333ESL/F770ES)		EH40	* 1-564-505-11	PLUG, CONNECTOR 2P	
		*****				< TRANSISTOR >	
		* 1-637-085-11 AC SW BOARD *****		Q310	8-729-281-54	TRANSISTOR 2SC1815-BL	
		< SWITCH >				< RESISTOR >	
S801	△1-554-538-00	SWITCH, PUSH (AC POWER) (1 KEY) (F333ESL/F770ES)		R316	1-249-926-11	CARBON	1.3K 5% 1/4W
		< CONNECTOR >		R317	1-247-721-11	CARBON	4.7K 5% 1/4W
SE8	1-564-321-00	PIN, CONNECTOR 2P				< VARIABLE RESISTOR >	
		*****		RV304	1-241-290-11	RES, VAR, CARBON 30KX2 (ATTENUATOR)	
		* 1-637-086-11 H. P BOARD *****				< RELAY >	
		< CAPACITOR >		RY301	1-515-726-11	RELAY	
C503	1-102-973-00	CERAMIC 100PF (F770ES:Germany/F870ES)	5% 50V	RY901	1-515-622-11	RELAY	
C553	1-102-973-00	CERAMIC 100PF (F770ES:Germany/F870ES)	5% 50V			*****	
		< JACK >				* 1-637-084-11 LED (VOL) BOARD *****	
J401	1-507-796-71	JACK (HEADPHONES)				< DIODE >	
		*****		D508	8-719-303-02	DIODE SEL2510C-D	
		* 1-637-082-12 VOL BOARD *****				*****	
		< CAPACITOR >				* 1-637-087-11 S. D. BOARD *****	
C318	1-124-902-00	ELECT 0.47uF	20% 50V	C310	1-136-169-00	FILM 0.22uF	5% 50V
C319	1-104-272-11	POLYSTYRENE 33PF	10% 50V			< CAPACITOR >	
C369	1-104-272-11	POLYSTYRENE 33PF	10% 50V			< CONNECTOR >	
C918	1-124-631-11	ELECT 47uF	20% 16V	EH13	* 1-564-507-11	PLUG, CONNECTOR 4P	
		< DIODE >		EH26	* 1-564-507-11	PLUG, CONNECTOR 4P	
D301	8-719-912-20	DIODE 1SS120		EH27	* 1-564-507-11	PLUG, CONNECTOR 4P	
D933	8-719-912-20	DIODE 1SS120		EH38	* 1-564-506-11	PLUG, CONNECTOR 3P	
		< CONNECTOR >		EH39	* 1-564-506-11	PLUG, CONNECTOR 3P	
EH14	* 1-564-507-11	PLUG, CONNECTOR 4P				< RESISTOR >	
EH28	* 1-564-509-11	PLUG, CONNECTOR 6P		R301	1-249-833-11	CARBON	20K 5% 1/2W
EH30	* 1-564-507-11	PLUG, CONNECTOR 4P		R302	1-247-717-11	CARBON	2.2K 5% 1/4W
EH34	* 1-564-507-11	PLUG, CONNECTOR 4P		R351	1-249-833-11	CARBON	20K 5% 1/2W
EH36	* 1-564-505-11	PLUG, CONNECTOR 2P		R352	1-247-717-11	CARBON	2.2K 5% 1/4W
		*****				< SWITCH >	
				S301	1-572-551-11	SWITCH, PUSH (2 KEY) (MUTING)	
				S304	1-572-551-11	SWITCH, PUSH (2 KEY) (SOURCE DIRECT)	
		*****				*****	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

SP-SW SP TERMINAL TONE

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
< RESISTOR >											
		* 1-637-088-12	SP-SW BOARD	*****		R443	1-247-727-11	CARBON	10	5%	1/2W
< CAPACITOR >											
C611	1-106-343-00	MYLAR	1000PF	5%	200V	R446	1-247-747-11	CARBON	470	5%	1/2W
< CONNECTOR >											
EH32	* 1-564-506-11	PLUG, CONNECTOR 3P				R450	1-247-747-11	CARBON	470	5%	1/2W
< RESISTOR >											
R618	1-247-741-11	CARBON	150	5%	1/2W	R493	1-247-727-11	CARBON	10	5%	1/2W
R619	1-247-741-11	CARBON	150	5%	1/2W	R496	1-247-747-11	CARBON	470	5%	1/2W
R621	1-247-747-11	CARBON	470	5%	1/2W	R500	1-247-747-11	CARBON	470	5%	1/2W
R623	1-247-747-11	CARBON	470	5%	1/2W	R501	1-249-689-11	CARBON	4.7K	5%	1/2W
R625	1-247-747-11	CARBON	470	5%	1/2W	R502	1-249-657-11	CARBON	220	5%	1/2W
R627	1-247-747-11	CARBON	470	5%	1/2W	R503	1-247-727-11	CARBON	10	5%	1/2W
(F770ES:Germany/F870ES)											
< RELAY >											
< SWITCH >											
S601	1-572-107-11	SWITCH, ROTARY (SPEAKERS)				RY602	1-515-676-11	RELAY			

< TEST POINT >											
						TP3	1-535-139-00	BASE POST 14MM (10MM PITCH) 2P			

* 1-637-090-12 TONE BOARD											

< CAPACITOR >											
C501	1-106-361-00	MYLAR	0.0056uF	10%	100V	C301	1-136-173-00	FILM	0.47uF	5%	50V
			(F770ES:Germany/F870ES)			C302	1-107-165-00	MICA	56PF	5%	50V
C502	1-102-820-00	CERAMIC	330PF	5%	50V	C303	1-123-369-00	ELECT	4.7uF	20%	63V
C551	1-106-361-00	MYLAR	0.0056uF	10%	100V	C304	1-123-369-00	ELECT	4.7uF	20%	63V
C552	1-102-820-00	CERAMIC	330PF	5%	50V	C305	1-123-369-00	ELECT	4.7uF	20%	63V
< DIODE >											
D612	8-719-912-20	DIODE 1SS120				C306	1-136-155-00	FILM	0.015uF	5%	50V
D613	8-719-912-20	DIODE 1SS120				C307	1-136-161-00	FILM	0.047uF	5%	50V
< CONNECTOR >											
EH31	* 1-564-506-11	PLUG, CONNECTOR 3P				C308	1-136-169-00	FILM	0.22uF	5%	50V
EH33	* 1-564-506-11	PLUG, CONNECTOR 3P				C309	1-136-175-00	FILM	0.68uF	5%	50V
EH45	* 1-564-507-11	PLUG, CONNECTOR 4P				C320	1-123-369-00	ELECT	4.7uF	20%	63V
< COIL >											
L401	* 1-422-009-13	COIL, AIR-CORE				C321	1-102-973-00	CERAMIC	100PF	5%	50V
L451	* 1-422-009-13	COIL, AIR-CORE				C351	1-136-173-00	FILM	0.47uF	5%	50V
						C352	1-107-165-00	MICA	56PF	5%	50V
						C355	1-123-369-00	ELECT	4.7uF	20%	63V
						C356	1-136-155-00	FILM	0.015uF	5%	50V
						C357	1-136-161-00	FILM	0.047uF	5%	50V
						C358	1-136-169-00	FILM	0.22uF	5%	50V
						C359	1-136-175-00	FILM	0.68uF	5%	50V
						C370	1-123-369-00	ELECT	4.7uF	20%	63V
						C371	1-102-973-00	CERAMIC	100PF	5%	50V
											(F770ES:Germany/F870ES)

TONE

INPUT

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
		< IC >				C153	1-104-274-11	POLYSTYRENE	47PF	10%	50V
IC301	8-759-602-19	IC M5220L						< CONNECTOR >			
		< RESISTOR >				EH12	* 1-564-507-11	PLUG, CONNECTOR	4P		
R304	1-247-713-11	CARBON	1K	5%	1/4W			< JACK >			
R305	1-246-545-00	CARBON	1. 0M	5%	1/4W	J101	1-507-831-41	JACK, PIN 6P	(CD/TUNER/PHONO)		
R306	1-247-758-11	CARBON	3. 3K	5%	1/2W	J102	1-507-831-41	JACK, PIN 6P	(AUX/TAPE 3 REC OUT, IN)		
R307	1-247-713-11	CARBON	1K	5%	1/4W	J103	1-507-831-41	JACK, PIN 6P	(DIRECT IN/ADAPTOR IN, OUT)		
R308	1-247-704-11	CARBON	220	5%	1/4W	J104	1-507-920-00	JACK, PIN 4P	(TAPE 2 REC OUT, ON)		
R310	1-259-421-11	CARBON	510	5%	1/4W	J105	1-507-920-00	JACK, PIN 4P	(DAT/TAPE 1 REC OUT, ON)		
R311	1-247-703-11	CARBON	180	5%	1/4W			< COIL >			
R312	1-247-718-11	CARBON	2. 7K	5%	1/4W	L101	1-424-397-11	COIL, CHOKE	200uH		
R313	1-249-551-11	CARBON	910	5%	1/4W	L102	1-424-397-11	COIL, CHOKE	200uH		
R314	1-246-545-00	CARBON	1. 0M	5%	1/4W	L151	1-424-397-11	COIL, CHOKE	200uH		
R315	1-246-545-00	CARBON	1. 0M	5%	1/4W	L152	1-424-397-11	COIL, CHOKE	200uH		
R354	1-247-713-11	CARBON	1K	5%	1/4W			< RESISTOR >			
R355	1-246-545-00	CARBON	1. 0M	5%	1/4W	R101	1-246-545-00	CARBON	1. 0M	5%	1/4W
R356	1-247-758-11	CARBON	3. 3K	5%	1/2W	R102	1-246-545-00	CARBON	1. 0M	5%	1/4W
R357	1-247-713-11	CARBON	1K	5%	1/4W	R103	1-246-545-00	CARBON	1. 0M	5%	1/4W
R358	1-247-704-11	CARBON	220	5%	1/4W	R104	1-246-545-00	CARBON	1. 0M	5%	1/4W
R360	1-259-421-11	CARBON	510	5%	1/4W	R105	1-246-545-00	CARBON	1. 0M	5%	1/4W
R361	1-247-703-11	CARBON	180	5%	1/4W						
R362	1-247-718-11	CARBON	2. 7K	5%	1/4W	R106	1-246-545-00	CARBON	1. 0M	5%	1/4W
R363	1-249-551-11	CARBON	910	5%	1/4W	R107	1-247-713-11	CARBON	1K	5%	1/4W
R364	1-246-545-00	CARBON	1. 0M	5%	1/4W	R108	1-247-713-11	CARBON	1K	5%	1/4W
R365	1-246-545-00	CARBON	1. 0M	5%	1/4W	R109	1-247-713-11	CARBON	1K	5%	1/4W
		< VARIABLE RESISTOR >				R110	1-247-739-11	CARBON	100	5%	1/2W
RV301	1-241-291-11	RES, VAR, CARBON	100K/100K	(BALANCE)				(F333ESL/F770ES:AEP, UK)			
RV302	1-241-292-11	RES, VAR, CARBON	10K	(TREBLE)							
RV303	1-241-293-11	RES, VAR, CARBON	10K	(BASS)							
		< SWITCH >									
S302	1-572-549-11	SWITCH, PUSH	(2 KEY)	(SUB SONIC)		R110	1-249-673-11	CARBON	1K	5%	1/2W
S303	1-572-549-11	SWITCH, PUSH	(2 KEY)	(MODE)		R111	1-246-545-00	CARBON	1. 0M	5%	1/4W
		*****				R112	1-259-436-11	CARBON	2. 2K	5%	1/6W
		* 1-637-091-12 INPUT BOARD				R113	1-259-436-11	CARBON	2. 2K	5%	1/6W
		*****						(F770ES:Germany/F870ES)			
		* 1-565-492-11 CONNECTOR, BOARD TO BOARD 16P				R120	1-246-545-00	CARBON	1. 0M	5%	1/4W
		* 4-835-639-00 PLATE, GROUND				R151	1-246-545-00	CARBON	1. 0M	5%	1/4W
		< CAPACITOR >				R152	1-246-545-00	CARBON	1. 0M	5%	1/4W
C101	1-162-285-31	CERAMIC	180PF		10% 50V	R153	1-246-545-00	CARBON	1. 0M	5%	1/4W
C103	1-104-274-11	POLYSTYRENE	47PF		10% 50V	R154	1-246-545-00	CARBON	1. 0M	5%	1/4W
C151	1-162-285-31	CERAMIC	180PF		10% 50V	R155	1-246-545-00	CARBON	1. 0M	5%	1/4W
		(F770ES:Germany/F870ES)				R156	1-246-545-00	CARBON	1. 0M	5%	1/4W
		(F770ES:Germany/F870ES)				R157	1-247-713-11	CARBON	1K	5%	1/4W
		(F770ES:Germany/F870ES)				R158	1-247-713-11	CARBON	1K	5%	1/4W
		(F770ES:Germany/F870ES)				R159	1-247-713-11	CARBON	1K	5%	1/4W

INPUT LED (P.L) PREOUT CONTROL

CONTROL

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
D914	8-719-912-20	DIODE	1SS120			R609	1-249-437-11	CARBON	47K	5%	1/4W
D915	8-719-912-20	DIODE	1SS120			R610	1-249-433-11	CARBON	22K	5%	1/4W
D916	8-719-912-20	DIODE	1SS120			R611	1-247-812-11	CARBON	160	5%	1/4W
D917	8-719-912-20	DIODE	1SS120			R616	1-249-398-11	CARBON	27	5%	1/4W
D918	8-719-912-20	DIODE	1SS120			R633	1-249-425-11	CARBON	4.7K	5%	1/4W
D919	8-719-912-20	DIODE	1SS120			R650	1-247-838-00	CARBON	2K	5%	1/4W
D920	8-719-912-20	DIODE	1SS120			R908	1-249-429-11	CARBON	10K	5%	1/4W
D921	8-719-912-20	DIODE	1SS120			R909	1-249-429-11	CARBON	10K	5%	1/4W
D922	8-719-912-20	DIODE	1SS120			R910	1-247-887-00	CARBON	220K	5%	1/4W
D923	8-719-912-20	DIODE	1SS120			R911	1-249-441-11	CARBON	100K	5%	1/4W
D924	8-719-912-20	DIODE	1SS120			R912	1-249-441-11	CARBON	100K	5%	1/4W
	< CONNECTOR >					R913	1-247-895-00	CARBON	470K	5%	1/4W
EH1	* 1-564-506-11	PLUG, CONNECTOR	3P			R914	1-249-405-11	CARBON	100	5%	1/4W
EH2	* 1-564-506-11	PLUG, CONNECTOR	3P			R915	1-249-430-11	CARBON	12K	5%	1/4W
EH3	* 1-564-506-11	PLUG, CONNECTOR	3P			R916	1-249-405-11	CARBON	100	5%	1/4W
EH4	* 1-564-507-11	PLUG, CONNECTOR	4P			R917	1-247-903-00	CARBON	1M	5%	1/4W
EH5	* 1-564-505-11	PLUG, CONNECTOR	2P			R918	1-249-429-11	CARBON	10K	5%	1/4W
EH6	* 1-564-506-11	PLUG, CONNECTOR	3P			R919	1-249-429-11	CARBON	10K	5%	1/4W
EH7	* 1-564-506-11	PLUG, CONNECTOR	3P			R920	1-249-425-11	CARBON	4.7K	5%	1/4W
EH8	* 1-564-512-11	PLUG, CONNECTOR	9P			R921	1-249-429-11	CARBON	10K	5%	1/4W
EH9	* 1-564-512-11	PLUG, CONNECTOR	9P			R922	1-249-425-11	CARBON	4.7K	5%	1/4W
EH10	* 1-564-505-11	PLUG, CONNECTOR	2P			R923	1-249-425-11	CARBON	4.7K	5%	1/4W
EH11	* 1-564-511-11	PLUG, CONNECTOR	8P			R924	1-249-425-11	CARBON	4.7K	5%	1/4W
EH46	* 1-564-506-11	PLUG, CONNECTOR	3P			R925	1-249-425-11	CARBON	4.7K	5%	1/4W
	< IC >					R926	1-249-413-11	CARBON	470	5%	1/4W
IC901	8-759-635-31	IC	M50253P			R927	1-249-429-11	CARBON	10K	5%	1/4W
IC902	8-759-239-47	IC	TC74HC123AP			R928	1-249-429-11	CARBON	10K	5%	1/4W
IC903	8-759-635-88	IC	M50720-255SP			R929	1-249-429-11	CARBON	10K	5%	1/4W
IC904	8-719-902-56	IC	PC817			R930	1-249-429-11	CARBON	10K	5%	1/4W
IC905	8-759-604-84	IC	M5F7806L			R931	1-249-429-11	CARBON	10K	5%	1/4W
IC906	8-759-604-84	IC	M5F7806L			R933	1-249-520-11	CARBON	47	5%	1/4W
IC907	8-759-962-08	IC	BA6208			R934	1-249-504-11	CARBON	10	5%	1/4W
IC908	8-759-962-08	IC	BA6208			R936	1-249-504-11	CARBON	10	5%	1/4W
	< TRANSISTOR >					R938	1-249-429-11	CARBON	10K	5%	1/4W
Q601	8-729-201-53	TRANSISTOR	2SA1015-GR			R940	1-249-399-11	CARBON	33	5%	1/4W
Q602	8-729-201-53	TRANSISTOR	2SA1015-GR			R941	1-249-441-11	CARBON	100K	5%	1/4W
Q603	8-729-140-96	TRANSISTOR	2SD774-34			R942	1-249-405-11	CARBON	100	5%	1/4W
Q604	8-729-281-54	TRANSISTOR	2SC1815-BL			R943	1-249-429-11	CARBON	10K	5%	1/4W
Q901	8-729-900-36	TRANSISTOR	DTC124ES			R944	1-249-425-11	CARBON	4.7K	5%	1/4W
	< RELAY >										
RY601	1-515-614-11	RELAY									
	< VIBRATOR >										
X901	1-577-260-21	VIBRATOR, CERAMIC									

	< RESISTOR >										
R606	1-249-429-11	CARBON	10K	5%	1/4W						
R608	1-249-437-11	CARBON	47K	5%	1/4W						

SW (F) **EYE** **OUTLET** **V.S**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Remark</u>	
		* 1-637-094-12 SW (F) BOARD			*****	S906	1-572-198-11	SWITCH, KEY BOARD (TAPE 2)				
						S907	1-572-198-11	SWITCH, KEY BOARD (DAT/TAPE 1)				

		< DIODE >						* 1-637-095-11 EYE BOARD			*****	
D506	8-719-301-49	DIODE SEL2810A						*****				
D507	8-719-301-49	DIODE SEL2810A						< CAPACITOR >				
D925	8-719-301-49	DIODE SEL2810A										
		(F770ES(GOLD)/F870ES(GOLD))										
D925	8-719-303-02	DIODE SEL2510C-D					C914	1-126-022-11	ELECT	47uF	20% 10V	
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))						< IC >				
D926	8-719-301-49	DIODE SEL2810A					IC909	8-749-920-59	IC A1QH3020S			
		(F770ES(GOLD)/F870ES(GOLD))						< RESISTOR >				
D926	8-719-303-02	DIODE SEL2510C-D										
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))					R932	1-249-421-11	CARBON	2.2K 5%	1/4W	
D927	8-719-301-49	DIODE SEL2810A						*****				
		(F770ES(GOLD)/F870ES(GOLD))						* 1-640-345-11 OUTLET BOARD (F770ES/F870ES)			*****	
D927	8-719-303-02	DIODE SEL2510C-D										
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))						1-533-183-11 HOLDER, FUSE				
D928	8-719-301-49	DIODE SEL2810A							* 4-923-814-01 PLATE, CONNECTION (F770ES/F870ES)			
		(F770ES(GOLD)/F870ES(GOLD))						< CAPACITOR >				
D928	8-719-303-02	DIODE SEL2510C-D										
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))					C801	▲1-161-741-00	CERAMIC 0.001uF 10% 400V (F770ES/F870ES)			
D929	8-719-301-49	DIODE SEL2810A						< CONNECTOR >				
		(F770ES(GOLD)/F870ES(GOLD))										
D929	8-719-303-02	DIODE SEL2510C-D					SE100	1-564-321-00	PIN, CONNECTOR 2P (F770ES/F870ES)			
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))					VH100	* 1-564-321-00	PIN, CONNECTOR 2P (F770ES/F870ES)			
D930	8-719-301-49	DIODE SEL2810A										
		(F770ES(GOLD)/F870ES(GOLD))					VH101	* 1-564-321-21	PIN, CONNECTOR 2P (F770ES/F870ES)			
D930	8-719-303-02	DIODE SEL2510C-D						*****				
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))						* 1-637-837-12 V. S BOARD (E) (F333ESL)			*****	
D931	8-719-301-49	DIODE SEL2810A							1-533-183-11 HOLDER, FUSE (F333ESL)			
		(F770ES(GOLD)/F870ES(GOLD))						< CAPACITOR >				
D931	8-719-303-02	DIODE SEL2510C-D										
		(F333ESL/F770ES(BLACK)/F870ES(BLACK))					C901	1-161-741-00	CERAMIC 0.001uF 10% 400V (E) (F333ESL)			
		< RESISTOR >						< SELECTOR >				
R613	1-249-799-11	CARBON	750	5%	1/2W							
R628	1-247-703-11	CARBON	180	5%	1/4W							
R629	1-247-703-11	CARBON	180	5%	1/4W							
R901	1-247-887-00	CARBON	220K	5%	1/4W							
R902	1-247-887-00	CARBON	220K	5%	1/4W							
R903	1-247-887-00	CARBON	220K	5%	1/4W							
R904	1-247-887-00	CARBON	220K	5%	1/4W							
R905	1-247-887-00	CARBON	220K	5%	1/4W							
R906	1-247-887-00	CARBON	220K	5%	1/4W							
R907	1-247-887-00	CARBON	220K	5%	1/4W							
		< SWITCH >						< CONNECTOR >				
S901	1-572-198-11	SWITCH, KEY BOARD (PHONO)					SE2	1-564-687-11	PIN, CONNECTOR 3P (E) (F333ESL)			
S902	1-572-198-11	SWITCH, KEY BOARD (TUNER)					SE3	1-564-687-11	PIN, CONNECTOR 3P (E) (F333ESL)			
S903	1-572-198-11	SWITCH, KEY BOARD (CD)					SE51	1-564-321-00	PIN, CONNECTOR 2P (E) (F333ESL)			
S904	1-572-198-11	SWITCH, KEY BOARD (AUX)					VH50	* 1-564-321-00	PIN, CONNECTOR 2P (E) (F333ESL)			
S905	1-572-198-11	SWITCH, KEY BOARD (TAPE 3)										

Note: The components identified by mark **▲** or dotted line with mark **▲** are critical for safety.
Replace only with part number specified.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
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ACCESSORIES & PACKING MATELIALS

1-465-801-11 REMOTE COMMANDER (RM-S703)
 (F333ESL/F770ES(BLACK)/F870ES(BLACK))
 1-465-801-21 REMOTE COMMANDER (RM-S703)
 3-753-600-11 MANUAL, INSTRUCTION
 3-753-600-41 MANUAL, INSTRUCTION
 3-753-601-11 MANUAL, INSTRUCTION (GERMAN)
 (Germany:F870ES)
 4-847-802-00 SCREW (AEP, E, Germany)
 * 4-931-954-01 CUSHION
 * 4-945-279-01 INDIVIDUAL CARTON (F770ES)
 * 4-945-280-01 INDIVIDUAL CARTON (F333ESL)
 * 4-945-282-01 INDIVIDUAL CARTON (F870ES)

HARDWARE LIST

#1	7-682-148-15 SCREW, TR
#2	7-682-546-09 SCREW, +B 3X5, PAWL
#3	7-682-547-09 SCREW +BVTT 3X6 (S)
#4	7-682-548-09 SCREW +B 3X8
#5	7-682-549-04 SCREW +B 3X10
#6	7-682-668-09 SCREW +PSW 4X30
#7	7-683-255-58 SET SCREW 5X6 HEXAGON SOCKET
#8	7-684-024-04 N 4, TYPE 2
#9	7-685-153-19 SCREW +P 3X30 TYPE2 SLIT
#10	7-685-234-19 SCREW +KTP 2.6X8 TYPE2NON-SLIT
#11	7-685-646-79 SCREW +BVTP 3X8 TYPE2 N-S
#12	7-685-647-79 SCREW +BVTP 3X10 TYPE2 SLIT
#13	7-685-650-79 SCREW +BVTP 3X16 TYPE2 SLIT
#14	7-688-004-02 W 4, SMALL

